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A

TREATISE

ON

FOREST-TREES:

CONTAINING

Not only the beſt Methods of their CULTURE hitherto practiſed, but a variety of new and uſeful DISCOVERIES, the reſult of many repeated experiments:

AS ALSO,

PLAIN DIRECTIONS for removing moſt of the valuable kinds of FOREST-TREES, to the height of thirty feet and upwards, with certain ſucceſs;

AND,

On the ſame principles, (with as certain ſucceſs) for tranſplanting HEDGES of ſundry kinds, which will at once reſiſt Cattle:

TO WHICH ARE ADDED,

DIRECTIONS for the Diſpoſition, Planting, and Culture of HEDGES, by obſerving which, they will be handſomer and ſtronger Fences in five years, than they now uſually are in ten.

By WILLIAM BOUTCHER, NURSERYMAN,
At COMELY-GARDEN, EDINBURGH.

Who then ſhall grace, or who improve the ſoil?
Who plants like BATHURST, *or who builds like* BOYLE.
'Tis uſe alone that ſanctifies expence,
And ſplendor borrows all her rays from ſenſe. POPE.

EDINBURGH:

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TO HIS GRACE

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HENRY DUKE of BUCCLEUGH,

EARL of DALKEITH and DONCASTER,

&c. &c. &c.

MY LORD DUKE,

NEITHER your GRACE'S *Birth nor Fortune, tho' the one is moſt illuſtrious, and the other ample, were the motives that induced me to beg the honour of your countenance to the following* TREATISE, *my point in view being, I conceive, of a higher nature than can be derived from any external advantages. What I have here written, is the effect of much experience, and long obſervation,—and I am made to believe, it will contribute to the general improvement of our plantations, and conſequently to the public benefit. This being the principal object of the Work, to whom can I inſcribe it with ſo great propriety, as to your* GRACE, *who, from the earlieſt dawn of manhood, has*

invariably and induſtriouſly purſued every meaſure tending to ſupport the decaying honour, and promote the real intereſt of your country?

Accept then, my Lord, theſe humble eſſays, as the only means in my power moſt expreſſive of that true eſteem which I ſenſibly feel, and which every honeſt conſiderate Scotsman muſt, for ſo noble and bold an aſſerter of his country's rights and liberties. I am, with the utmoſt deference and reſpect,

MY LORD DUKE,

Your GRACE'S *moſt obedient,*

And moſt humble Servant,

COMELY-GARDEN,
July 10. 1775.

WILL. BOUTCHER.

THE PREFACE.

AFTER the great number of books that have been publiſhed on Gardening in general, ſome of them by men of learning and obſervation, it may to many appear unneceſſary, and even preſumptuous, to offer any thing new to the Public on that ſubject: But the Author of the following ſheets flatters himſelf, that, on an attentive peruſal of them, theſe impreſſions will be removed; that the ſyſtem is far from being exhauſted; that the beſt rules hitherto directed are here extended and improved; and that ſo many new obſervations are made, as to render a very conſiderable part of the work an original performance.

To relate the many pleaſures and advantages that attend the ſkilful practice of Gardening in all its various branches, but particularly in that of noble and extended plantations, would ill become my humble talents, after the high encomiums beſtowed on it by the greateſt antient and modern authors. It is enough for me to ſay, it has been the favourite ſtudy and amuſement of the greateſt and wiſeſt Princes, Philoſophers, Lawgivers, and Conquerors, many of whom have gladly retired from the ambitious purſuits of life, and enjoyed more ſolid and rational pleaſures in the virtuous innocent employments of planting, and cultivating their gardens and farms, than in all the magnificence and luxury of Courts.

In the books hitherto publiſhed on the cultivation of Foreſt Trees, the rules have been very ſhort and confined: Their authors ſeem generally to have adopted the opinion, which yet unhappily prevails amongſt the greateſt number of unexperienced planters, that when they have put a young tree in the ground, they have done their duty, and that their labours are at an end: But ſuch are ſomewhat like unnatural parents, who neglect to tend and foſter their infant offspring, ſince trees, as well as animals, muſt have food and diſcipline, to rear them to ſtrength, maturity, and good order. Theſe books comprehend no more than ſowing the ſeeds, planting the cuttings, or laying down the branches in their proper ſeaſon, there to abide a certain time, and from thence to be tranſplanted to the nurſery, where they are to continue two, three, or four years; from the nurſery, to be removed to the places where they are meant to remain for good; and thus the buſineſs is at an end. But this Treatiſe is much more comprehenſive: It contains not only the beſt methods of propagating plants in all their various ways, and of their culture to the common ages and ſizes of tranſplanting preſently practiſed in Great-Britain, but will alſo inſtruct the gardener, by plain, eaſy, and certain methods, to remove moſt of the valuable deciduous Foreſt Trees, to the height of thirty feet or upwards, with the ſame ſafety as the ſmalleſt plant; and that ſuch will not only be as handſome trees, but will ever after advance as much in growth, as thoſe ſtanding in the ſame kind of ſoil and ſituation, from having been planted young; and that they will, without the expence of ſtaking, reſiſt the moſt impetuous winds, the greateſt enemy of new-planted trees raiſed and managed in the common way.

From this culture of the trees too they may be planted with the moſt certain ſucceſs, and without any ſenſible check to their growth, during all the ſummer months, without any additional expence, further than two or three extraordinary waterings. This circumſtance alone ought ſurely to be of much conſideration in this climate, as our grounds in winter are uſually ſo much lock'd up with froſt, flooded with rains, or the weather otherways ſo intemperate, that our common planting ſeaſon is confined to a ſmall part of ſpring and autumn. I ſhould likewiſe imagine, that men of fortune, who ſpend the winters in town, could hardly be more agreeably entertained in the country, during the milder ſeaſon, than in, as it were, creating (if I may be allowed the phraſe) verdant groves, thickets, avenues, *&c.*

Nor is this plan confined to deciduous trees only; it extends to many of the beſt kinds of Evergreens, the greateſt part of which are now generally thought unfit for planting, after four, five, or ſix years old: But here certain rules are given for removing them with the ſame ſafety as the other kinds, to the height of eight, ten, and twelve feet, according to their different ſpecies.

On the ſame principles likeways, and with the ſame advantages, hedges of Thorns, and many other plants, may be removed, that will immediately reſiſt cattle, ſhelter the ground, and ſave the expence of ditches, palings, and other fences neceſſary to protect them when young.

To which is added, *Obſervations on the beſt method of planting Hedges, adapted to various ſoils and ſituations.* Any improvement made on this ſubject is certainly of great and univerſal

concern to this kingdom. By this not having been properly adverted to, but left to the direction of ignorant gardeners, or common labourers, much diſcouragement has been given to incloſing with hedges; and many perſons of fortune have, within theſe few years, beſtowed large ſums in that way to very little purpoſe.

SEVERAL uſeful diſcoveries are alſo ſubjoined, on the improvements that may be made by Grafting and Inoculation, on ſtocks that will inlarge the ſmaller kinds of plants, and render the tender more hardy.

MOST of the modern authors on Gardening have boldly included all its various parts: This, I am afraid, is arrogating to themſelves a reach of fancy and genius, that few, if any, have yet diſcovered a juſt title to. Had they confined their writings to fewer branches, they would have acquired more reputation, and been more uſeful to their country. And here, I humbly think, Mr POPE's caution to thoſe indiſcreet men who launch beyond their depth, may with propriety be applied:

" One ſcience only will one genius fit;
" So vaſt is art, ſo narrow human wit:
" Not only bounded to peculiar arts,
" But oft' in thoſe confin'd to ſingle parts."

I HAVE therefore in that reſpect endeavoured to avail myſelf, from the unſucceſsful preſumption of others: Conſcious as I am of my contracted abilities, and being doubtful of gratifying the Public on the topics here preſented, I have confined them to

a few, and thoſe only that have in a particular manner engaged my attention, and of which I have had much experience.

To have the various productions of Gardening in any degree of perfection, I doubt we muſt inlarge our preſent plan, of keeping one gardener only where much is to be done. I have for a ſucceſſion of years, and at different ſeaſons, viſited with attention many of the moſt elegant and magnificent ſeats in Great-Britain, but never once in my life have ſeen all the different branches of the buſineſs properly executed, and the crops ſeaſonably and uniformly flouriſhing, in regular progreſſion and beauty, under the management of one man. And how indeed is it poſſible it ſhould be? Every gardener has his favourite points, which will be firſt and beſt done, and every ſpecies of gardening muſt be attended to at ſeveral periods of the year; but, in the ſpring, much the greateſt part of all muſt be executed in a few weeks. The kitchen-garden muſt be crop'd with its various ſeeds and plants; hot-beds muſt be made, and conſtantly attended to; the green-houſe, hot-houſe, and flower-garden, will employ much of the principal gardener's time and perſonal labour,—as will alſo the fruit-garden, in pruning the eſpalier, wall, and ſtandard trees. Theſe different parts have indeed a nearer connection than the others, and may with propriety come under the direction of one man, which, if he executes well, by providing a large family, and elegant table, in the great variety of wholeſome luxury theſe gardens ſhould abound with, he will find no idle time to ſpare, though a perſon of knowledge in his profeſſion, and of the greateſt ſobriety and induſtry.

THE other principal part, formerly called the *Pleaſure-garden*, in all the ſtately late deſigns, conſiſts chiefly in extenſive lawns, and fields of graſs, interſperſed with large plantations of Foreſt Trees and Flowering Shrubs, planted in the wilderneſs way. To execute, and (from bad ſeaſons, with other accidents) even to ſupply the defects of theſe works, as well as to keep up a proviſion for incloſing and planting the other parts of the eſtate, a nurſery ought always to be ſupported. The planting, annual pruning, and culture of the ſoil in large wilderneſs deſigns, ſo as both to promote the growth, and reduce the trees to a beautiful form, requires ſkill and labour. To ſow the ſeeds of Flowering Shrubs, Fruit and Foreſt Trees,—to increaſe them by layers, cuttings, *&c.*—to improve many kinds by grafting and inoculation, —and to remove them at proper periods, giving them all other neceſſary culture,—is as much as any one man can ſee executed with judgment; and whatever gardener holds theſe performances in ſo cheap a light as to allow their being conducted by his common workmen, that moment he forfeits his pretenſions to ſenſe and ability in his buſineſs, if not to honeſty alſo.

To men of plentiful fortunes then, who would promote all the various branches of Gardening, and enjoy them with refinement, I think two gardeners, for the different purpoſes named, ſeem indiſpenſibly neceſſary: And I cannot help here proceeding a little farther, humbly to repreſent, that the moſt effectual method of promoting the more univerſal knowledge of the art in this part of the kingdom, would be to give the gardener double the encouragement we uſually do, as the preſent (I mean in general) is extremely diſproportioned to the importance of his office.

I MUST lay it down as a principle, that ſome ſmall degree of learning at leaſt is neceſſary to make a good gardener; and what ſenſible man will beſtow that on his ſon, to qualify him for an employment, that, to all appearance, and without ſome uncommonly favourable circumſtance, will never gain him more than fifteen or twenty pounds a year? or what boy of ſpirit and genius will ſtudy a profeſſion, from which he can only receive ſo poor a return? It therefore appears to me very certain, that an increaſe of wages to theſe uſeful men, would, in a ſhort time, have moſt deſireable effects, and that we ſhould then have at command twenty intelligent gardeners, where we now perhaps are at a loſs to find one; nor is it to be doubted the maſter would gain in greater proportion than the ſervant.

A GREAT man beſtows from fifty to a hundred pounds a year on a French cook; for a Britiſh gardener, ſeldom more than from twenty to forty. I deſpiſe all national reflections, and eſteem an honeſt Frenchman of any profeſſion, but in a particular manner a French cook; yet I can by no means think him intitled to ſo great an advantage above the other. Every body knows the beſt cook cannot furniſh out a handſome table without the aſſiſtance of a good gardener; and perhaps there is as much judgment required in raiſing materials of the beſt quality, as in dreſſing them well.

HOWEVER, from what I have here ſaid, endeavouring to put the gardener on the footing I think a good one deſerves, I am, as has been hinted, far from meaning to depreciate a good French cook; nor am I either clowniſh or moroſe enough, to ſurmiſe, that a man of birth and opulence ſhould deny himſelf

the elegance that attends the labours of theſe induſtrious men: On the contrary, as the nature of my profeſſion, in planning and deſigning ground works, has often procured me the honour of ſitting at the beſt tables, where I have often eat of diſhes dreſt in the French manner, I muſt acknowledge I ever thought them both as pleaſant and healthful as the beſt Britiſh I had ever taſted. Notwithſtanding which, I eſteem the various labours of an able gardener, to be of a nobler nature, and of more ſolid importance to every perſon, from a Prince to a private man, than all the diſhes invented from the birth of Cleopatra to the preſent date.

As incloſing ground with hedges, and making plantations of Foreſt trees, are the firſt principles, and moſt ſolid foundation for promoting all the different branches of huſbandry and gardening, our northern climate being highly improved by theſe means, the greateſt encouragement is ſurely due from all lovers of their country, to whoever ſhall contribute to the executing theſe important points, in a handſomer, more ſucceſsful, and more expeditious manner than is generally practiſed,—though I am ſorry to ſay, we are leſs attentive to, and farther behind in knowledge of the beſt methods for effecting this, than in moſt other improvements. We plainly ſee, that, to procure the quick growth and comely figure of our own hardy native plants, we muſt give them the mutual aſſiſtance of one another; and how much more neceſſary ſhelter is in rearing tender foreign trees and vegetables with any exuberance of growth, is too plain to inſiſt on. To that alone, then, we owe all the choiceſt delicacies of the table, and the more refined pleaſure of viewing a vaſt variety of the moſt beautiful plants in nature, the

original production of more temperate climates, flouriſhing in our open air.

As a good nurſeryman can ſooneſt and moſt effectually procure us ſuch eſſential advantages and pleaſures, I cannot help thinking him, for theſe and many other reaſons, juſtly intitled to be ranked in the higheſt claſs of gardeners; but I am afraid this is only the caſe with the few of ſound judgment, and extended genius,—and that with the general, the unthinking, and contracted part, a man who can raiſe an early cucumber, or melon, is in much higher eſtimation, tho', in all the various parts of the profeſſion, nothing is more plain and ſimple, than theſe operations with the aſſiſtance they have of glaſſes and dung: To which may be added, that the ſubject of kitchen-gardening is much more exhauſted than the culture of trees, from being more generally practiſed, as more eaſily undertaken. The returns of profit from nurſery are tedious, and to proceed in it to any conſiderable degree, a man muſt be wealthy, as he muſt long be out of his money; but the returns from the other being annual, the ſtock required for it ſmall in compariſon, and the luxury of the preſent times having raiſed the price both of early and late vegetables very high, it becomes a more tempting bait for the bulk of mankind; whence good nurſerymen, or good nurſeries, are not ſo frequently to be found as could be wiſhed.

NOTWITHSTANDING the importance of a good nurſery-gardener to his country, and the general eſteem in which ſuch have formerly been held, that profeſſion has lately fallen into much contempt, and, in ſome reſpects, for juſt cauſes. From the ſucceſs of a few ſenſible judicious men in it, various impoſtors

have ſtarted up, who, by the ſtrength of a little money, and a great deal of aſſurance, now aſſume that character, tho' unbred to, or unknowing in the meaneſt branch of gardening, but followers of the groſſeſt and moſt unthinking employments, in direct oppoſition to the cool obſervation and deliberate ſtudy of Nature in her admirable productions. Some of theſe gentlemen have ſet out, by amuſing mankind, under no meaner pretence than ſerving their country, by reducing the price of trees: But they are not conſiderate enough themſelves to reflect, that an intelligent gardener will readily diſcover their practice as ſubverſive of every improvement he can poſſibly hope ſoon to make from the purchaſe of their plants, which are crowded together with many times the number that ought to be in the ſame quantity of ground; from whence they can well afford to ſell their ſtunted, ſmothered ſtuff, at a lower price than an honeſt knowing gardener can raiſe good plants for. To appear more formidable too in this quackery, they have publiſhed pompous catalogues of they know not what, collected I know not where, and ſtrangely jumbled together no body knows how, of half the plants in the creation, and ſome that I believe never were in it; but they have forgot to provide even ſpecimens of many of theſe wonderful productions, and when you go to purchaſe them, you have the mortification to find they were ſold the preceding week or day. To theſe catalogues they have likeways affixed prices, in imitation of ſome petty nurſerymen in the North of England, who, not having abilities in their profeſſion to puſh their way by the ſale of good plants to ſkilful men, have had recourſe to this practice, by ſelling bad ones at the expence of the ignorant and unwary. I have been well acquainted with the practice of the moſt eminent nurſerymen in the South of England near thirty years;

during which period, there is not any material difference in the prices of the moſt uſeful capital plants. They are generally an honeſt, ſenſible, induſtrious ſet of men, and their emulation is of a virtuous kind, tending to public utility, as it conſiſts in who ſhall raiſe the beſt, not the cheapeſt trees,—ſenſible that theſe improperly cultivated are dear of any price, and that the greateſt difference of prices is an inconſiderable circumſtance, even to a poor man, compared to the conſequences that muſt enſue from their having been of a good or ill quality.

It gives me the moſt ſenſible pain to be under the neceſſity of ſaying any thing that has the appearance of ſeverity or ill nature, as I hold in the greateſt abhorrence and deteſtation, every principle tending to traduce an honeſt well-meaning man. I have the comfort however to think, that none ſuch will be offended with what I have ſaid in the preſent caſe; but be that as it may, I am certainly bound, by all the ties of truth, and gratitude to my country, to detect whatever errors I diſcover on a ſubject that is the baſis of its greateſt improvements, and which not attended to, but the preſent defects in the culture of trees and hedge-plants allowed to proceed, muſt terminate in at leaſt greatly retarding that cultivation our farms and gardens would otherways admit of.

I esteem every honeſt judicious nurſeryman in the kingdom, and moſt heartily wiſh their number increaſed. To many of them I have repreſented the ill conſequences that muſt naturally ariſe from not beſtowing proper culture on their plants: The common return is, that others ſelling their crowded, half-ſuffocated ones, at a price below what they can afford to raiſe them for at proper

diſtances, and to give them proper removals, they are conſtrained to go with the current, many purchaſers not being ſkilful enough to eſtimate the value of a tree by any other ſtandard than its height, without attending to the far more eſſential circumſtances of its roots, thickneſs, and proportion. To theſe defences I have ever obſerved, what I am certain would have been the caſe, that a perſeverance in the beſt practice would ſoon ſtop the progreſs of theſe invaders, and make them ſenſible of their inability to overcome the honeſty and induſtry of good gardeners, and that as they had ſtarted up like muſhrooms, they would vaniſh like ſmoak; but if thoſe who ought to know better will adopt their pernicious principles, it is hard to ſay how or when they may ſtop, if vigorous meaſures are not uſed to oppoſe them.

In this caſe, if ſelf-intereſt is juſtly conſidered, independent of other more ſacred conſiderations, the Scots nurſerymen and ſeedsmen have the moſt flattering example before their eyes, to animate them in the purſuit of ſuch a practice as I have here endeavoured to recommend; and that is, in two perſons, a father and ſon, of their profeſſion, who, having made it an invariable rule in buſineſs, notwithſtanding whatever preſent loſs they might ſuſtain, to ſell no articles but the moſt excellent of their kinds, ſoon were juſtly eſtabliſhed in ſo extenſive a reputation and trade, as has acquired them large fortunes, with unblemiſhed characters, and that too perhaps with greater eaſe, than many others have procured a ſcanty ſubſiſtence, whoſe principles were not eſtabliſhed on ſo rational and ſolid a foundation. I have no intention to flatter by this remark. I never had any obligations to, or connections with the parties I mean, nor have any further knowledge of them than their characters and faces; but, on the

preſent ſubject, I will neither applaud a friend, nor detract from an enemy, without juſt grounds, but tell my undiſguiſed ſentiments upon it to the beſt of my knowledge,—and ſhall venture to predict, that whoever ſteadily adheres to the practice of thoſe who have been mentioned as examples, will, in ſome degree, partake of their good fortune.

THE practice I have here adviſed is plain, and eaſily executed, nor can I believe any man of reflection will doubt of its ſucceſs: But how unlucky would ſome of our late ſanguine undertakers be, who having endeavoured, at conſiderable expence, to merit the favour of the Public, by the reduction of prices, the prevention of impoſition from others, and the extirpation of all gardeners who oppoſe their public-ſpirited plans,—how lamentable indeed, if, after all theſe worthy attempts, which they have publiſhed in ſo modeſt and affecting a manner, their thankleſs country ſhould neglect beſtowing on them either an increaſe of reputation or wealth!

To ſtop the faſt increaſing evil of nurſerymen (or thoſe who call themſelves ſo) ſelling bad plants, to the general diſcouragement of improvements, would ſhow a truly public ſpirit; but I am afraid no private obſervations or communications, however juſt and well meant, will anſwer the end deſired, particularly from one of the profeſſion; and that, to effectuate the cure, (than which I conceive nothing more eaſy), the Public muſt be the phyſician.

EVERY body knows the general and amazingly good effects of the premiums given by the Commiſſioners and Truſtees for

manufactures and improvements in Scotland. As one inſtance of many, I ſhall only mention that given to thoſe who raiſed the greateſt quantity of the beſt kinds of Potatoes, which ought to eternize their names. At that period, from the exorbitant price of corn, the poor were in the utmoſt diſtreſs, and that root was proportionably high: But no ſooner were the premiums for it publiſhed, than an almoſt univerſal ſpirit and emulation aroſe amongſt the farmers and kitchen-gardeners, who ſhould excel, which, joined to an increaſe of knowledge in its culture, from extenſive practice, in two or three years reduced the former price to leſs than one half; ſo that it ſuddenly became, and ſtill continues to be, the greateſt part of common labourers food.

From reflecting on the ſalutary effects of theſe premiums, and the bad ſtate of our nurſeries, I cannot help humbly begging leave to repreſent to that Honourable Board, That were an honorary reward (as I imagine a pecuniary one would be unneceſſary) publiſhed at the end of four, five, or ſix years, as they may judge moſt proper, to the perſon who ſhall raiſe, from the youngeſt to the largeſt plantable ſizes, the greateſt quantity of the beſt cultivated Fruit and Foreſt-trees, Hedge-plants, and other uſeful nurſery articles, in proportion to the extent of land he employs for theſe purpoſes, and a committee of ſkilful candid men appointed to viſit the nurſeries about Edinburgh, or where elſe they ſhall think them worthy of notice in Scotland, at mid-ſummer when cloathed with their leaves, or in autumn before the planting ſeaſon commences,—to inſpect the various methods of their culture, and general ſyſtem of management,—to ſee ſpecimens of the plants raiſed, for examination of their roots, as well as the proportion of their bodies,—and to advertiſe in the uſual way the perſon moſt deſerving,—I am

firmly perſuaded we ſhould proceed faſter on the road to the general improvement of our plantations, than from all the writings and examples of the ableſt men, or even from any other method that can be deviſed for the purpoſe. This would be making a man of real merit in his profeſſion juſtly conſpicuous; it would detect ignorance and quackery, and expoſe the impoſtures of the pretended patriot nurſerymen, who ſell cheap for the *good* of their country. Were this the caſe, every man of abilities would exert them, both as the means of ſupporting his reputation, and procuring his bread;—we ſhould immediately ſee a very material difference in the quality of common ſale plants from their improved culture, and the buſineſs would then only be carried on by thoſe who were able to conduct it properly, and for the public benefit.

Of all quacks I know, next to thoſe in phyſic, who rob us of our healths and lives, the moſt dangerous are quacks in nurſery-gardening;—they not only rob us of our money, but, what is far worſe, keep us long in the anxious expectation of what we never enjoy. To the injuries we ſuffer by bad Foreſt-trees and Hedge-plants, which are many and great, others may be added of a moſt diſagreeable and hurtful nature. After a man has planted an orchard, furniſhed his kitchen-garden with Eſpalier and Wall-trees of kinds agreeable (as he believes) to his taſte, or his convenience and profit, been at a conſiderable expence in the culture of them, and waited many years in hopes of a grateful return for his money and labour,—yet after all this, when the trees become fruitful, if he finds himſelf utterly diſappointed, and, in place of the ſorts he required, has nothing he wanted, but perhaps every thing he diſlikes, I need not mention how

baſe the deceit is, and how ſhocking to the perſon thus deceived, life being too ſhort often to repair theſe misfortunes. Such circumſtances however are far from being uncommon, and too many gentlemen in Scotland will ſhake their heads with hearty concern on the remembrance of ſimilar caſes, and ſecond me in the juſtice of this obſervation, and how neceſſary it is to be cautious in the choice of nurſerymen.

It has been an almoſt univerſally received opinion, that trees ought to be raiſed in the nurſery on a poorer ſoil than that to which they are afterwards to be tranſported for good; and it has been directed by many, otherways the moſt reſpectable authors. I muſt acknowledge this doctrine has a very ſpecious appearance at firſt view: I adhered to it early in life, and it is ſo ſeemingly conſiſtent with Nature, that I am not ſurprized it has been generally adopted by young planters; at the ſame time, I cannot account for thoſe who have had much practice, and long experience, not expoſing the errors of it.

In the following ſheets I have given ſome examples, from frequently repeated experiments, of the ill effects I have felt by planting young and tender ſeedlings in the pooreſt ſoils, and the greater ſucceſs attending thoſe that were well-grown, on the ſame, or in ſimilar ſituations. The conſequences of raiſing plants on poor hungry land, are no leſs fatal than planting the ſeedlings in ſuch, and ſhould as much as poſſible be avoided. I have mentioned, in the culture of many trees, the neceſſity of promoting their vigorous growth at firſt, in order to their becoming ſtately and handſome; nor can this be effected by any other means than being early nurſed in generous ſoil, for whatever

future purpoſes they are meant, or to whatever ſituations they are deſtined; and that if they are but barely ſupported from infancy on meagre ground, they will never afterwards become ſtrong, though removed to that which is rich and feeding. The cauſes for this, when the ſubject is ſearched to the bottom, are demonſtrably plain: From their harſh and unfriendly food they contract diſeaſes, which, if not immediately mortal, are certainly incurable; they neceſſarily have bad roots, they are hide-bound, and their branches weak and crooked; in ſhort, tho' they may long languiſh in the ſtate of buſhes, they will never arrive to the magnitude of what may properly be called trees.

But though I have adviſed trees to be raiſed on good land, let it be underſtood, I mean that only which is naturally ſo, and not what has lately been forced and pampered with dung, or at leaſt before that dung has been mellowed and reduced to the conſiſtence of earth, ſuch being yet more baneful to trees in general, than even the pooreſt ſoils.

I am not ſurpriſed at the frequent complaints made by Gentlemen, on the trees they often have from the nurſeries about Edinburgh. I know from ſome quarters they have too good cauſe for ſuch complaints. I have ſeen conſiderable portions of theſe gardens covered five or ſix inches deep with new-made horſe and cow dung, immediately dug into the ground, and, without the intervention of a ſingle week, planted with trees and hedge-plants. I ſhould be ſorry to think, nor do I believe, that many of my readers will require a deſcription of the effects ariſing from this ſhameleſs practice; but, to the few yet quite uninformed, I ſhall only mention, that from this corruption at the root of the

plant, after ſtanding ſome time, it will become bliſtered, which bliſters will contain vermin, and theſe vermin, by eating the roots, occaſion a feſter, that, communicating with the juices in the body, will contaminate it alſo, make it become ſcabbed and hide-bound, to a degree no remedy will cure,—and in this ugly ſtate the tree grows annually weaker, till it periſh. This infection, however, does not ſoon diſcover itſelf, as, for ſome years, from the abundance though groſſneſs of its food, it will make prodigious ſhoots,—and, from theſe unnatural ſhoots, they are boaſted of as fine healthful plants, without reflecting on the latent poiſon in their veins.

I KNOW not if I may be indulged in venturing to make ſome diſtant compariſon between theſe plants (animated as they ſeem at firſt with the rank firey particles of new dung) and a man who drinks exceſſively of brandy, or other ſpirituous liquors: The one exults for a time in immoderate, tho' falſe wit and gaiety; the other ſeem to ſmile in the diſplay of a no leſs extravagant growth; but both, in the long run, become diſeaſed, faint, and languid. Whether I am right in this obſervation, I ſhall not pretend to determine; but I certainly believe I am, in thinking a nurſeryman, who is guilty of this fraud, more hurtful to the Public, and better intitled to baniſhment, than ſome poor rogues I have known undergo that ſentence: Such characters, however, I know; but it is my buſineſs only to expoſe bad practices, not bad men. It is theſe, and other circumſtances of ill management, that have chiefly founded the common report, of trees raiſed on good ſoils not afterwards ſucceeding in that which is worſe,—tho' there is nothing I can with more confidence aſſure my readers of, than that I have had very many of the cleareſt demonſtrations to the contrary, where the plants were cultivated with judgment.

In works of this kind, it is common to have a long diſſertation on the ſoils moſt proper to be choſen for raiſing nurſery; but this has generally appeared to me only an innocent method of ſwelling a book, when an author is coſtive in furniſhing other materials. I have deſcribed the ſoils that the different plants treated of moſt affect, and the beſt manner of preparing theſe ſoils, at the ſame time with the other circumſtances of culture, which I imagine is the ſubſtantial part of all that can be ſaid on the ſubject. With reſpect to the choice of ſoil, people muſt in general put up with the beſt they can get, as he muſt be either a very cunning, or very lucky gardener, who ſhall diſcover ſo ſmall a ſpot of ground as is commonly required for a nurſery-garden, conſiſting of as many various qualities as will be agreeable to all the plants neceſſary there to be raiſed: This muſt be the effect of judgment and labour, nor does Nature often admit of our enjoying ſuch advantages but by the ſweat of our brow. I ſhall therefore only further obſerve, that the moſt deſirable ſoil for a nurſery, is that which is looſe and dry, reduced to the ſmalleſt particles by frequent digging and raking, and which, if of a generous nature, does not require great depth; but the worſt quality of the worſt land, is that which neareſt approaches to heavy moiſt clay, wherein the trees will neither root liberally, nor our uſual weather in winter and ſpring admit of its being laboured, but at particular, and frequently too late periods; whence it is impoſſible, that buſineſs can be carried on to any conſiderable extent, ſeaſonably, in ſuch grounds.

I have ſaid ſo much, on various occaſions in the following Treatiſe, of the diſadvantages the kingdom ſuſtains from the ignorant or ill-deſigned culture of plants, as probably to be accuſed

of repetition. If I ſhould be ſo, I ſhall not endeavour to defend myſelf, as in truth I could not eaſily avoid it; for where the errors are very groſs, and their correction of ſo much moment, I imagine juſt impreſſions of them cannot be too deeply rooted: In which caſe, I flatter myſelf, a fault of this kind may probably paſs as a more pardonable ſpecies of bad writing, than ſome others.

It may probably be objected by ſome, that tranſplanting large trees has often been practiſed without ſucceſs. This is a melancholy truth, too glaring to be denied; tho' the reaſons for it are no leſs obvious,—they have proceeded without judgment, and their miſcarriages were a natural conſequence. But in this Treatiſe the former errors are corrected, and a rational ſyſtem, founded on Nature, and confirmed by experience, diſcloſed.

Large trees raiſed and cultivated after this manner, ſo far from ſucceeding worſe than thoſe planted young, will, from their much greater abundance of roots ſpreading near the ſurface, and enjoying all the benefits of the heavenly influences, grow much more freely, than ſuch whoſe roots, being deeper, are ſtruggling with cold, ſluggiſh, inanimated ſoil.

When a man has made a plantation of young trees, his labours, as has been hinted, are but begun; but by following this practice, they are ended, as the plants, being above the ſize of receiving injury from cattle, and reduced to their proper form by different prunings, require little or no further attention.

By adopting this mode of culture too, a perſon who will at once raiſe or purchaſe as many of the better kinds of young trees as

anſwer his future deſigns, tho' he is twenty years in executing his plan, may, at the end of that time, have his ornamental plantations of equal ſize and beauty.

It has been a great diſcouragement, and is a frequent obſervation made by men advanced in years, that from the ſmall ſize of trees uſually planted, they cannot hope to ſee them in any great degree of beauty or perfection during their lives. By following the rules here laid down, this diſcouragement will be entirely removed; and ſuch as are above the regard of common expence, may have a flouriſhing plantation of well-grown trees in one ſeaſon, as the principles on which the whole of the plan proceeds are infallibly certain, and ought to be convincing, even on peruſal of the work, to every perſon of an ordinary capacity, and moderate knowledge of Gardening.

In ſome papers of the Spectator, on the pleaſures of imagination, we have a moſt raviſhing deſcription of an Evergreen, or Winter Garden. Mr Addiſon, the author of theſe papers, from a cloſe attention to his immortal writings, was not much ſkilled in the practical parts of Gardening, but, when diſengaged from more intenſe ſtudies, it was his favourite amuſement; and as the ſlighteſt obſervations of ſo great a man are infinitely preferable to the moſt laboured preciſion of an inferior genius, of all the later deſcriptions I have read, or plans ſeen executed, I never was ſo much animated on that ſubject as from the hints he has thrown out, tho' the deſigns for gardens in his time were of a much more contracted kind than now, and leſs imitative of the charming negligence of Nature. But after what he has ſaid, for me to inlarge on the comfort and pleaſure ſuch a place, not

diſtant from the houſe, and well diſpoſed, muſt afford during ſeveral of our winter months, would be the higheſt preſumption and vanity: Therefore I ſhall only obſerve, that I cannot help looking on it as a capital defect in our elegant and extended deſigns, that no attention is paid to a circumſtance ſo conducive to health, and productive of pleaſure.

HAVING endeavoured to avoid extending this Treatiſe to any unneceſſary length, in the catalogues of the plants I have only given the different ſpecies, their commonly received names in England and Scotland, their botanical characters being univerſally known to the Learned, and of no uſe to the young and illiterate gardener, but in ſome caſes might more probably perplex and confuſe him, and, till he is a little advanced in the knowledge of Botany, rather expoſe his ignorance, than eſtabliſh his reputation for judgment.

IN like manner I have abridged the catalogues of many authors, ſome of whom have wrote without experience of what they recommend, and others, either more ignorant or deſigning, have given or created different names to the ſame plant. This, I can honeſtly aſſure my readers, I have carefully guarded againſt. The ſpecies I have mentioned are diſtinct, and I have recommended none but thoſe that from experience I believed worthy of it.

THE common uſes and virtues of the timber of ſuch trees as are not frequently cut down with us, I have principally taken from Mr Evelyn, as Mr Miller had done before me; but to theſe I have added other well-atteſted circumſtances relating to them.

No book on Gardening can now be altogether original, from the many great improvements made; but the ſubject will yet admit of very many advances towards the more perfect knowledge of it. It is far from my intention to introduce novel doctrine, or to make innovations on the general culture of plants, where I have not found it defective. But this I have by no means done: I have, as others uſually do in early life, taken many hints from different authors, and examples from practical gardeners, tried their effects, and, where ſucceſsful, have followed and directed them: But I have not reſted ſatisfied with what may be called bare ſucceſs; I have endeavoured to improve on the beſt rules I knew, to aboliſh ſome others altogether, ſubſtituting better in their place, and, for the general ſyſtem of culture here directed, I am unconſcious of being indebted to any author or other man. That I have many years ago ſucceeded in my own practice by following the ſyſtem here laid down, I have the moſt inconteſtible evidence to adduce; but to convince unbelievers at a diſtance, muſt be the effect of trial, which is all I require. In the mean time, I ſhall liſten to the voice of the Public with the greateſt reſpect and deference, and, as far as in my power, amend whatever errors are juſtly pointed at.

HAVING mentioned Mr Evelyn, I muſt here expreſs the ſenſible pleaſure I feel, from hearing a fine impreſſion of his Silva, with notes by ſome Gentlemen of approved learning, and knowledge of Gardening, is now printing. His obſervations on the culture of young plants in the ſeed-bed and nurſery, tho' the beſt publiſhed before or during his time, are ſince then much improved, and they now become the leaſt valuable part of his work; but the additions and remarks on theſe, with the other eſſential improvements that will apparently be made, muſt render

it the moſt valuable book on the ſubject ever appeared. His juſt encomiums on the pleaſures and advantages ariſing from well-cultivated plantations, if attentively read by young men of education and fortune, muſt animate all but the moſt taſteleſs and dull to the purſuits of Gardening; and ſome of his chapters to that purpoſe, ought to be recorded in capital letters of gold, and hung up in the dining-rooms of all rich men who love their country, or mean to give the moſt ſtriking example of true patriotiſm to the preſent and ſucceeding generations.

I AM far from the vanity of believing, that many juſt reflections may not be thrown out againſt the following Treatiſe. Tho' I have had much experience in the culture of trees, I have none from writing in ſo public a manner; and my moſt ſanguine expectations will be accompliſhed, if an abler pen will improve and extend my hints in a more maſterly way,—to whom I ſhall be happy to communicate any farther obſervations I am capable of making.

FROM ſhowing my manuſcript, (which I have often done without ceremony), and ſome of the contents tranſpiring, I am already ſenſible of having enemies amongſt ſome of the nurſerymen. I cannot help it, having done but my duty. I wiſh none of them ill, and deſire them, for their own ſakes only, to reflect, that till they refute my arguments, their enmity to me will but the more expoſe themſelves:—I ſhould be ungrateful at the ſame time, if I meant that to be underſtood of the profeſſion in general, as I have the pleaſure to believe, it is not the greater part of them, or thoſe moſt formidable, for knowledge at leaſt, that are ſo ill inclined.

I AM ſenſible the humble ſtile of this work may render it obnoxious to ſome of the many Critics with which this age abounds, who may diſplay their learning, if not ill-nature, at my expence, though ignorant of the ſubject on which I treat. To the correction of the ſenſible and candid I will patiently ſubmit, and endeavour to improve myſelf from their obſervations: But the partial and ſnarling ſpecies of them, I hold in the greateſt contempt; for as ſuch can neither affect my intereſt nor reputation, they ſhall be unable to ruffle my temper. I acknowledge myſelf incapable of adorning my ſubject with the beauties of language, or, if I were, ſhould I be very ſollicitous about it: For though I have reaſon to believe this ſimple Treatiſe will be admitted into many libraries, both of the Great and Learned, yet if the principles of culture on which I proceed are juſt, their politeneſs and humanity will excuſe other defects; to which I muſt add, that it is far from being intended for ſuch alone, but no leſs to inſtruct the ignorant and illiterate gardener (to whom the plaineſt language is ſurely the beſt) in ſuch practices as will improve our plantations, both in point of beauty and profit. I have not ventured however on this publication, without the approbation of ſeveral Gentlemen of candour, learning, and knowledge in Gardening,—and by them I have been perſuaded to give it to the Public in my own homely dreſs, wherein alone it now appears, and which is the more agreeable to me, as I have ever thought, that even the diſguiſe of another man's language is a kind of impoſition on the world, and that it is but juſt to publiſh one's own ſentiments in one's own way.

I SHALL only further intimate to thoſe (if any ſuch there be) who feel themſelves ſore from what I have written, that no

ſooner will I have an opportunity, than give them the moſt convincing proof of the rectitude of my intentions, and that I have no perſonal reſentment at any one of them:—That the obſervations I have made on the general bad culture of trees, are apparently too juſt, and that conſequently it was my indiſpenſible duty, when writing on a ſubject of ſuch univerſal concern, to detect the errors I diſcovered, as the only means of having them amended. Whoever begins to renounce his former ill practices, I ſhall, with ſuperior pleaſure, in place of the painful ſenſations I have felt from what is ſaid, exert my utmoſt endeavours, and uſe the ſtrongeſt expreſſions I am capable of, by applauding them in the moſt public manner; and if communicating the effects of my experience is thought worthy their notice, they may, from the ſincerity of my heart, command me with the moſt unreſerved freedom. The greater part of them will probably, and I hope juſtly, think themſelves above ſo mean an aſſiſtance, yet the young and unexperienced may reap ſome advantage by it.

I WERE unworthy the indulgence I have received from the Public in general, and ungrateful to my Subſcribers in particular, to conclude this, without expreſſing (what I truly feel) the warmeſt gratitude for the aſſiſtance their liberal ſubſcription afforded me in carrying on this publication. The quality, if not the number of thoſe, does me honour, as I can boaſt of many the greateſt and moſt reſpectable names in the kingdom; and if I am fortunate enough to have contributed to the good of my country, and of conſequence to their pleaſure or advantage, I have obtained the higheſt reward my moſt ſanguine hopes ever pointed at.

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TREATISE

ON

FOREST-TREES.

CONTENTS.

DECIDUOUS TREES, with their different Species.

Chap.		Page.
I.	*The* Elm Tree,	1
II.	*The* Beech Tree,	21
III.	*The* Platanus, *or* Plane Tree,	25
IV.	*The* Maple Tree,	29
V.	*The* Oak Tree,	34
VI.	*The* Ash Tree,	45
VII.	*The* Lime Tree,	51
VIII.	*The* Hornbeam Tree,	56
IX.	*The* Walnut Tree,	59
X.	*The* Chesnut Tree,	66
XI.	*The* Horse-Chesnut Tree,	73
XII.	*The* Larix, *or* Larch Tree,	76
XIII.	*The* Virginian Tulip Tree,	84
XIV.	*The* Acacia Tree,	89
XV.	*The* Wild Cherry Tree, *in* England *commonly called the* Black Cherry, *in* Scotland *the* Geen Tree. —*This chapter alſo contains the* Bird Cherry, *in* Scotland *called the* Hagberry,	92 96
XVI.	*The* Poplar Tree,	97
XVII.	*The* Lote, *or* Nettle Tree,	104
XVIII.	*The* Laburnum, *or* Bean-Trefoil,	108
XIX.	*The* Alder Tree,	111
XX.	*The* Birch Tree,	112
XXI.	*The* Service Tree,	115
XXII.	*The* Judas Tree,	118
XXIII.	*The* Elder Tree,	124
XXIV.	*The* Tacamahaca Tree,	126

EVERGREENS, with their different Species.

CHAP.		PAGE.
XXV.	*The* PINE TREE, - -	128
XXVI.	*The* FIR TREE, - - -	141
XXVII.	*The* CEDAR TREE, - -	149
XXVIII.	*The* CYPRESS TREE, - -	159
XXIX.	*The* Arbor Vitæ, *or* TREE of LIFE, -	164
XXX.	*The* Ilex, *or* EVERGREEN OAK TREE,	168
XXXI.	*The* CORK TREE, - -	174
XXXII.	*The* HOLLY TREE, - -	178
XXXIII.	*The* YEW TREE, - -	188
XXXIV.	*The* Laurel, *or* CHERRY BAY TREE, -	192
XXXV.	*The* BAY TREE, - -	197
XXXVI.	*The* Arbutus, *or* STRAWBERRY TREE, -	202
XXXVII.	THORNS,—*their culture from the ſeed, till they arrive to the ſize of becoming fencible Hedges at tranſplanting*, - - -	207
XXXVIII.	*On the propagation of* TREES *by* Layers, -	232
XXXIX.	*On* GRAFTING *and* INOCULATION, -	235
XL.	*On* FORESTS *or* WOODS, *and the moſt ſpeedy manner of* rearing *them*, - -	243
XLI.	*On making* TREES fit for removal, *that have ſtood uncultivated, and too thick, in Nurſeries or Woods*, - - -	256

A

TREATISE

ON

FOREST-TREES.

CHAPTER I.

THE ELM TREE.

The SPECIES *are:*

1. The ſmall-leav'd or true ENGLISH ELM;
2. The ENGLISH ELM with large rough leaves;
3. The FRENCH ELM;
4. The rough-bark'd DUTCH ELM;
5. The CORNISH ELM;
6. The RED ELM from CANADA;
7. The SCOTS ELM in England, call'd the WITCH ELM;
8. The ENGLISH ELM with ſtrip'd leaves.

THE five ſorts firſt mentioned are propagated by layers or ſuckers, the former of which is by much the better method, as the trees, ſo raiſed, will, in their firſt ſtages, advance more in growth, and make handſomer plants than theſe taken from the roots of old trees; neither will they ſo ſoon, or in ſo great a number, produce ſuckers, which retards the growth of the tree. I ſhall therefore firſt deſcribe the manner of raiſing

thoſe kinds in that way, and proceed to the beſt methods of their culture, from the mother, till they arrive to the height of thirty feet or upwards.

HAVING prepared a ſpot of ground, neither too light and thin, nor too moiſt and heavy, but freſh and mellow, that has been well trenched the preceding year, and all root-weeds and ſtones carefully pick'd out of it, and that has been a year or two employed in leafy kitchen-garden crops, dig it well, and level it in the beginning of October: Then, if you have them not yourſelf, procure from a nurſeryman your ſtools, or mother-plants; let theſe, if you can get ſuch, be trees that have been cut over cloſe by the ground two years preceding, but that have not yet been layed; cut all their branches over again, two or three inches above the laſt cutting, from which they will produce a great number of clean young ſhoots the following ſummer; plant theſe at about eight feet aſunder in the Quincunx order, which will fill the ground more equally than by planting them in ſquares; then give them a gentle watering, to ſettle the earth about their roots.

IF you cannot procure ſuch as have been cut over with a view to making mother-plants of them, chuſe from the nurſery ſound vigorous trees, of about ſix or ſeven years growth; and if they have been two or three times tranſplanted, they will be ſo much the better, as, by having abundance of roots, they will produce plenty of ſtrong ſound branches: Cut them over ſlanting, eighteen inches or two feet above ground; then make a trench long enough to receive them lying on their ſide, ſloping ſo as the root may be covered ſix or ſeven inches, and three or four in-

ches of the top appear above the ſurface; place the wounded part, which ought to be cut very clean and ſmooth, downwards, to prevent being injured by the winter rains; plant them at the ſame diſtances, watering them as the former, keep them diligently clear of weeds, frequently ſtirring and looſening the earth about them, ſo as to receive the full benefit of the ſummer rains and dews. If the ground is of a good quality, and the ſeaſon favourable, many of them will be fit to lay the following October; and ſuch ſhoots as are too weak for laying then, being again cut over, will produce enough to furniſh the ground with a full crop of layers the ſucceeding autumn.

As early in October as the weather will permit, begin laying your Elms, giving them a gentle watering, which, in dry weather, ſhould be frequently repeated during the ſummer months; the expence whereof will be well repaid by the number of roots and ſtrength of your layers. The different methods of performing this operation on all the trees here treated of, will be deſcribed in a chapter by itſelf, to avoid repetitions.

The following October, if the branches have been ſkilfully laid, and the ground managed as directed, moſt of the layers will be ſufficiently rooted; when, having prepared a ſpot of good mellow ground, as for the ſtools, carefully uncover the plants, whoſe fibres are at this time extremely tender; raiſe them gently up with the ſpade, and with a ſharp knife cut them off at the extremity of their roots, and ſuch of them as have not puſhed out fibres at the joint where they were laid, but are what the gardeners call *club-rooted*, ſhould be thrown away, as theſe will never make good plants, or reſiſt the winds: Having ſeparated

them from their mothers, trim away only the ſmall hairy fibres that are bruiſed and broken, which are apt to mould, and endanger the tree; but be very ſparing of what is freſh and ſound, ſhortening them and the principal roots moderately, tho' many faſhionable gardeners make a little too free in this point, by cutting moſt of them away, endeavouring to ſhow their addreſs, by making trees grow without them; keep them as little time as poſſible out of the ground; cut them over about a foot in height, and plant them in lines three feet aſunder, and eighteen inches diſtance in the line: Here let them remain two ſeaſons, when they ſhould again be cut over, in the beginning of March, within two or three inches of the ſurface: By this time the plants will be well rooted, and, the ſucceeding ſummer, in a good ſoil and temperate ſeaſon, they will produce ſtraight clean ſhoots, four and five feet high. In March following, prune away all ſtrong lateral and ill-placed branches cloſe to the ſtem, but leave ſeveral of the ſmaller ſhoots, more or leſs as the plants are thick or ſlender bodied, to detain the ſap, and augment the trunk of the tree; the not obſerving which, is one great cauſe of ſeeing ſo many trees growing, without proportion, to great heights, with ſlender bodies and heavy tops, unable to ſupport themſelves, but bending almoſt to the ground with every guſt of wind, from which, of courſe, they never can arrive to magnitude or beauty. Here theſe trees may remain another year, when, if they are intended to be made fit for tranſplanting at large ſizes, they muſt be removed to another nurſery, and planted at greater diſtances: But before I proceed to that, I ſhall direct their culture from ſuckers, and of the Scots Elm from ſeed, till they are fit to be treated in the ſame manner as thoſe, and when the ſame management will anſwer all the kinds. It may here be neceſſary

to obſerve, after having cut over your Elms, or indeed any other tree, that, as ſoon as the young ſhoots appear, you ſhould rub off all but the moſt promiſing one, which will much advance the growth of it.

Being provided with ſuckers grub'd up from the roots of old trees, in the ſpring, when the ſap begins to riſe, which for them is preferable to the autumn, cut off all the bruiſed and broken roots, and trim their tops to about ſix or eight inches high; lay them in drills cut out with the ſpade, eighteen inches line from line, and eight or nine inches in the line; give them a gentle watering, and keep the ground clean and looſe about them: Having ſtood here one year, cut them over by the ground, and let them remain another, when they ought to be raiſed and planted in a ſeparate nurſery, at double the former diſtances. Such of them as have made ſtrong ſhoots, and thick in proportion to their height, may be planted at full length; but ſuch as are dwarfiſh and ill-formed, or tall and ſlender, muſt be ſhortened again, more or leſs as they have good or bad roots; thoſe with good roots leſs reduced in their height than the others, which ought to be an invariable rule in the pruning all ſorts of Foreſt-Trees: In this ſituation, let them remain two, but not exceeding three years, managing them in all reſpects as the layers.

The Canada Elm having been lately imported to Britain, they are not yet arrived to any magnitude with us, but in their native country they grow to a vaſt ſize. I have only cultivated them for three years paſt, during which time they have exceeded all the different ſpecies of Elms in growth conſiderably, and there is every probable appearance they will ſoon become ſtately trees in

this climate. I have increaſed them from layers with eaſe, and they root more abundantly that way than the Engliſh Elm. I have alſo grafted them on Engliſh, Scots, and Dutch ſtocks, ſucceſsfully; and the moſt vigorous ſhoots have been from the Dutch, though theſe on the Engliſh ſeem to have a more elegant form: Their leaves are broader than thoſe of the Scots or Dutch Elm, but ſmoother, and of a much more lively green; from which circumſtances, they ſeem to claim our encouragement. Theſe trees produce plenty of ſeeds in Canada, from whence they may eaſily be procured; but from the length of the voyage, and the delicacy of the ſeeds, they ſeldom arrive freſh in Britain: Therefore, the readieſt way to cultivate them here, is from layers, or by grafting them; and ſuch plants will perhaps be hardier than thoſe raiſed from foreign ſeeds.

The Scots Elm may be propagated to the ſame advantage as the other ſorts, by layers, and will produce abundance of roots with greater facility, and in courſer land, than the Engliſh; but as they generally yield plenty of ſeeds annually, which are eaſily obtained, and which is much the cheapeſt way of raiſing large quantities of them, I ſhall direct their culture in that way.

The ſeeds of this tree commonly ripen from the beginning till the middle of June, as the ſeaſon is more or leſs forward: It is eaſy to diſcover their ripeneſs by the huſk being full and firm, inclining to a tawny brown colour. Theſe ſeeds muſt be attentively look'd after, as they approach to maturity; for when they are fully ripe, a blaſt of wind, or heavy rain, will drive them all off the trees in a day's time, as I have often experienced; and as

the ſeeds are very ſmall, it will be difficult to gather any quantity of them, and indeed impoſſible if amongſt graſs, or where there is not a clean ſurface; but having watched the proper time, and ſelected the faireſt and ſtraighteſt trees, the beſt method of gathering them, is to make a man mount the tree, ſpreading a mat or canvaſs under it, when, gently ſhaking the branches, the ripe ſeeds will eaſily part with them and drop down. By this practice, you will have nothing but the moſt generous fully ripened ſeeds, a circumſtance of no mean conſideration in your future plantations; whereas, in the common way of ſweeping the ſeeds from the ground, there is always a great deal of chaff, with many weak unripened ſeeds.

The common practice is to ſow theſe ſeeds a few days after gathering them, by which means a number of them will riſe in four or five weeks; but theſe coming up at the hotteſt time of the year, and not having ſummer enough to make them ſtrong plants before the hard weather comes on, are commonly ſpewed out of the ground the ſucceeding winter; or if that ſhould be uncommonly mild, and they ſtand it out, yet ſuch will be weak ſtunted plants, and hardly ever make free growing handſome trees; and though the bulk of the ſeeds will not appear till the following ſpring, yet, from the ground being hard and battered with the winter rains, they will make poor ſhoots, compared to ſuch as are ſown on freſh well-prepared land in the ſpring: It is therefore better management, and you will ſooner come to your purpoſe, to raiſe vigorous healthful plants of theſe, or any other kinds, in a proper way, than ſtruggle with the recovery of what have been originally ſtarved and ſtunted. For theſe reaſons, I ſhall pay no regard to common rules, however prevailing, further

than I have found them ſucceſsful, but deſcribe the methods of culture experience and obſervation has taught me are beſt, and by which I have raiſed great quantities of this valuable tree to a ſurpriſing ſize in a few years.

As ſoon as the ſeeds are gathered, ſpread them on a canvaſs in the open air, but not expoſed to a warm ſun, which would dry them too faſt, and extract their vegetative juices; turn them over frequently, ſeparating the cluſters, into which, from their moiſture, they are apt to gather and grow muſty; let them be placed under cover in the night-time, to protect them from the rains and dews, which muſt be continued longer or ſhorter as the weather is temperate and clear, or damp and cloudy, but in general they will require ten or twelve days ſeaſonable weather to make them dry enough to keep: After this, they ſhould be put in bags, but not hard preſſed in them, and carried to the ſeed-loft, where they may remain five or ſix weeks, by which time they will be thoroughly dry and firm, without having loſt any of their virtue; and the ſeaſon of vegetation being almoſt over, they will be in no danger of ſpringing that year. From the ſeed-loft let them be removed to any covered ſhady place in the nurſery, and mixed with one-third part fine ſand to two-thirds of the ſeeds, covering them three or four inches thick with more ſand or fine looſe ſifted earth, to prevent being injured by the froſts; and in this ſituation let them remain till February following.

About the 12th of this month, or as ſoon after as the weather will permit, prepare a ſpot of looſe rich garden earth, made perfectly clean of root-weeds, and finely raked: Divide this land in beds three and a half feet wide, with alleys eighteen inches:

Thruſt off a little of the earth with the head of the rake, as is practiſed in ſowing onions, and other ſmall kitchen crops; then ſow the ſeeds moderately thin, (thick ſowing being an almoſt univerſal though capital error in this and moſt kinds of tree-ſeeds); clap the ſeeds with the back of the ſpade gently into the ground, which will give a ſmooth level ſurface, and make it eaſy to cover them of an equal thickneſs; then draw on the earth that has been thruſt back, and throw a little more from the alleys, till they are covered half an inch thick, but not more, deep covering being alſo another general error.

By the beginning of April, the ſeeds will appear above ground; after which time, when the weather is dry, and not froſty, they ought to be refreſhed with frequent but very gentle waterings, either in the evenings, or early in the mornings, and carefully kept clear of weeds, which otherways would deſtroy many plants, and much impede the growth of the remainder.

If the ſeeds have been ſown in a good well-prepared ſoil, and the ſeaſon has been favourable, they ought all to be raiſed the following ſpring; but if the ground is poor, and of courſe the plants ſmall, they may ſtand another year; in which event, it will be proper to draw the largeſt from amongſt them, which otherways, the ſucceeding ſummer, would prevent the ſmall ones from having air and moiſture, and conſequently rob the greateſt part of their proper nouriſhment.

The ſeparation of the larger from the ſmaller plants, in all kinds of nurſery, though not generally attended to, is of great conſequence, both in point of uſe and beauty, as, from this prac-

tice, the trees nearly keep pace with one another in ſize, but which not obſerved, many are ſmothered or ſtunted by being overhung, to the great injury and deformity of the nurſery; and indeed this rule ought to be extended, not only to nurſeries, but more particularly to ſuch trees as are planted out where they are to remain.

THESE plants having been carefully raiſed from the ſeminary with all their fibres, ſhorten their top-roots, and commit them to the nurſery, the well-grown in October, but the ſmaller not till February, leſt the winter's froſt ſpew them out of the ground: Plant the largeſt in rows two and a half feet aſunder, and a foot diſtance in the row, where they may remain two years; but let the ſmaller be laid in beds one foot row from row, and about ſix inches in the row, to ſtand one year only, when they may be treated as the larger ſeedlings, and like them ſtand two years longer.

THE Engliſh Elm with ſtrip'd leaves, may be grafted on any of the Elms, though on the plain Engliſh they make the handſomeſt plants; but in order to preſerve their original variegation, they ought to be planted on a poor light ſoil, as in deep rich ground they loſe much of that beauty, and ſometimes turn quite plain, though the moſt effectual method I have ever found for preſerving the colours of this and many other ſtrip'd plants, is to propagate them from layers of trees that are richeſt in the variegation, and which will continue ſo much better than ſuch as have been grafted on plain ſtocks.

BESIDES the common methods of raiſing Elms from layers, ſuckers and ſeeds, there are many propagated, by grafting and

inoculating the Engliſh kind on Scots ſtocks. For certain ſoils and ſituations, this is a very great improvement; but where that is not judiciouſly conſidered, and the genius of the land where they are planted out for good conſulted, it may have an oppoſite effect: I ſhall therefore (having tried many experiments on this favourite tree) be particular in mentioning the advantages, or otherways, of propagating the Engliſh Elm by grafting, adapting the ſtocks on which they are grafted to the ſoils where they ought to be planted, and the improvements in profit and beauty that may be obtained from this practice.

Where the ſoil is dry, ſound, and generous, and the climate good, there is no ſpecies of the Elm yet familiar to us, equal in beauty to the true ſmall-leav'd Engliſh, from layers of its own kind; nor has it any fault, but being ſhy to root (when unſkilfully laid), and in ſtormy ſituations reclining from the wind; but, by the preſent ſyſtem of cultivation, that defect will be intirely cured, and it will root as abundantly as the Scots Elm, or any other tree, and reſiſt the moſt impetuous winds equally well.

Next to the true Engliſh, I eſteem the Corniſh Elm as the fineſt tree of the kind, both for loftineſs of growth, elegance of form, and the lively chearful verdure of its leaves.

The Engliſh Elm grafted on the Scots makes both a beautiful and valuable tree, yet it is ſtill inferior in regularity of form, and loftineſs of ſtature, to thoſe raiſed from their own mother; and as every tree muſt in ſome meaſure partake of the ſtock on which it is grafted, ſo this has a near reſemblance of the Scots Elm in its bark even when young, and when old, like them, grows more

looſe, ſpreading, and leſs erect than the true Engliſh, though, when young, they are extremely beautiful.

WHERE the land is tolerably deep, though coarſe, and inclined to clay or till, thoſe on Scots ſtocks will ſucceed better than the Engliſh on its own bottom; but where the ground is thin and hungry, it is in vain to plant them.

ON moiſt, heavy, coarſe, and even wet lands, that have any competent degree of ſtrength, plant the rough Dutch Elm; and in ſuch ſituations, I have even raiſed goodly thriving plantations of the Engliſh, grafted on ſtocks of them, which makes a fairer tree than thoſe on the Scots ſtock, and has a nearer reſemblance of the true Engliſh, as the Dutch Elm itſelf has. At the ſame time, though this plant moſt generally affects a deep ſoil, I have ſeen many ſtately thriving trees of them on burning ſand and gravel.

THE French Elm affects a deep rich moiſt earth, where they will make amazing progreſs, and become beautiful trees. In ſuch a ſituation, if the Engliſh Elm is choſen, graft them on ſtocks of the French, which makes the fineſt plants of the whole tribe, the Engliſh on its own bottom only excepted, and which has no competitor, when ſuited to its proper ſoil.

THE French Elm may alſo be much improved, by grafting it on the Engliſh, when required to be planted on ſuch ſoil as is directed for that plant.

HERE it may be neceſſary to obſerve a practice extremely common amongſt ignorant nurſerymen, which is, cutting their

Engliſh Elm grafts from thoſe on Scots ſtocks, and which indeed have the faireſt and plumpeſt buds, (a plain indication from whence they immediately proceed, the buds of the Scots being larger and more turgid than thoſe of the Engliſh) but theſe gentlemen either do not regard the quality of the plants they ſell, ſo they are paid for them, or are ignorant, that, by repeating this practice, the Engliſh Elm may be brought ſo far to degenerate, as, in many graftings this way, to differ very little from the Scots; therefore, whatever kind the ſtocks are on which you graft the Engliſh, let the grafts be taken from trees of the true kind, raiſed by layers of their own mother. This, however little attended to, nature plainly dictates.

It may alſo be proper to notice here, that all Elms planted in gardens, and by the ſides of walks, lawns, or avenues, ought to be on Scots ſtocks, as theſe produce no ſuckers, which the Engliſh, French, and Dutch, do in ſuch quantities, as to make it very troubleſome and expenſive keeping ſuch places clear of them, and in good order.

I am well aware that the ignorant part of my profeſſion (but who I hope are not the majority) will ſay, here is a great deal of time, land, and labour loſt, in cutting over trees before ready to ſell and make money of, or at any rate which might have remained as they were till larger and higher priced. According to common practice, where ignorance and diſhoneſty go hand in hand, it will be difficult to convince ſuch men of their real intereſt, which they perhaps believe conſiſts in getting money by whatever means as faſt as they can. Such will not eaſily relinquiſh their former ill-habits, or reflect, that a perſon of taſte and

knowledge in gardening will reward their patience and induſtry, by readily paying a higher price for a handſome vigorous plant, than for an unſhapely ſtunted one: To ſuch therefore I do not mean to addreſs myſelf, but thoſe of more ingenuous and liberal views. I will boldly affirm, that though a little more land and labour is beſtowed, there is in the end no time loſt, but much time ſaved by this operation, as, in four or five years, theſe cut over will be conſiderably larger than the others, with this further deſirable circumſtance, that, in place of being ragged, unſightly, and ill-rooted, they will be ſtraight and clean-ſkin'd, with a much greater abundance of roots. In ſhort, cutting over eſtabliſhes the plants, by diverting the ſap to the roots, frees them from the injury and concuſſions of the winds, and makes them produce handſome and generous ſhoots, infinitely preferable to ſuch as are abandoned to nature and accident without this diſcipline; and when ſeaſonably practiſed, nothing will ſo much accelerate the ſucceſs of plantations for many years.

THUS having directed the beſt methods of treating theſe plants in their early ſtages, and which indeed is all the culture commonly beſtowed on them, for whatever purpoſes they are deſigned, or at whatever ſizes to be removed, I proceed to their management for a ſucceſſion of years, with a view to their being tranſplanted when large trees, and which, by obſerving the rules here laid down, they may be, with the moſt certain ſucceſs, to any ſize, capable of being raiſed and tranſported.

THESE trees, if planted in a good ſoil, having now arrived to the height of ſix or ſeven feet, the ſame practice will anſwer for all the ſorts of Elms.

YOUR ground being prepared by a good digging, which on this occaſion I prefer to trenching, (as deep looſe ſoil would invite the roots downward, whereas the preſent ſyſtem requires their ſpreading as much as poſſible near the ſurface), raiſe your plants carefully, with all their roots and herby fibres; reduce the downright roots conſiderably, but only ſmooth with a a ſharp knife the extremities of the ſpreading ones, and whatever earth adheres to the fibres, if the diſtance is ſmall to their new quarters, ſhould be preſerved, cutting away only ſome of the ſmalleſt ſtraggling hairy parts; for roots are the mouths that ſuck in the nouriſhment, and transfuſe it to all the parts of the tree. The roots thus prepared, prune away, cloſe to the body, all ill-placed ſtraggling branches, leaving only a few of the ſmalleſt, to detain (as has been ſaid) the ſap, and ſwell the trunk of the tree: Plant them in lines four feet aſunder, and eighteen inches in the line; let them be watered, to ſettle the earth about their roots, and in this ſituation they ought to remain two years only.

FROM this nurſery remove them to another, dreſſing their roots and bodies as at laſt removal; and plant them in lines five feet aſunder, and two feet in the line, where they may remain three years.

LET them be again removed, and planted in lines eight feet aſunder, and ſix feet in the line, in which ſituation continue them four years; let theſe have a plentiful watering, and obſerve that the waterings be increaſed in proportion to the age and ſize of the trees.

The ground between the lines, from firſt to laſt, ought to be well dug every ſpring and autumn, which will much increaſe the number, and promote the ſpreading of the roots, and of courſe the growth of the plants.

The trees being now twelve years old, and in good land, will be from twenty to twenty-four feet high, and may either be planted out where they are, to remain for good, or again removed to the fields, or any ſpot of good land moſt convenient, and planted at leaſt ten feet aſunder, to be ready for whatever deſign may be in view, or afterwards occur; whence, any time from three to ſeven or eight years, they may not only be removed with undoubted ſucceſs, but with ſuch abundance of earth adhering to them, and ſuch ſtrength and proportion of body, as to defy the rudeſt aſſaults of the winds, even at firſt planting, without ſtacking or any other ſupport; which, though an almoſt univerſal practice, is, notwithſtanding, the reſult of ignorance, and is only neceſſary to ſupport the defect of good culture, by proping trees that have been injudiciouſly managed, as none of the ſtraight growing pyramidal trees (the deciduous kinds more particularly) have the leaſt want of that aid, if the directions here given are attended to.

Every gardener, of the ſmalleſt obſervation, muſt be ſenſible, that the rotting of the wounded parts of old trees is the moſt general cauſe of their death; but from this practice no violence is committed, no amputation made, but on the young and tender roots and branches, which immediately heal; from whence nature points out, that this proceſs may be continued (particularly with the Elm) while it continues freſh and vigorous, without retarding its growth in any material degree.

THAT I have been very liberal, if not extravagant, in ground, by the diſtances allowed the plants, and that few nurſerymen have ſuch an extent of it as to proceed deeply in this plan, is a reflection I am ſatisfied will be made by numbers; though, that I have not exceeded a proper bounds, long experience has convinced me, and will others who make the experiment as fairly as I have done: But if my aſſertion ſhould not be thought ſufficient without another reaſon, I ſhall give one that I hope will convince all, and that, by making proper uſe of the vacancies, the preſent ſyſtem may turn out even frugal. The trees, till they are ſix or ſeven feet high, are allowed no greater diſtance than every honeſt and ingenious nurſeryman will admit to be a proper medium; after which, from the increaſed diſtances, the plants being annually pruned as they ought, the ground may be crop'd with Turnips, Onions, Leek, Carrot, Beans, Cabbage, Collyflower, and a variety of other garden herbs, without the ſmalleſt injury to the trees, or the herbs receiving any injury from them; particularly the early crops, from which I have frequently had profitable returns: Early turnips particularly, and other tender roots and greens, in ſevere ſprings, when they have been totally cut off in the open quarters of the garden, between the lines of trees, from the ſhelter they afford, I have often found ſucceed; from which circumſtance it is demonſtrable, that trees planted at conſiderable diſtances, and their ſuperfluous branches regularly pruned off, may be cultivated at a moderate expence. With reſpect to nurſerymen who have ſmall portions of land, by adhering to the practice here directed, they may inlarge their bounds at a ſmall expence, as the annual returns from the kitchen crops amongſt the trees, if well cultivated, will go far to pay both the ground rent and labour.

If the land is thin and hungry, or a cold tilly clay, on which you intend to plant the Engliſh Elm, the common method of making pits for them, is loſt time and money. In ſuch ſoils the Dutch only will ſucceed, where it is amazing with how many difficulties it will ſtruggle, and ſoon become a large tree. But in theſe unfriendly ſituations, the Engliſh muſt be courted (as well it deſerves) to diſplay its beauty.

To effect this, I know but one certain method, which is, to plant on the ſurface, or as much above it as you can afford ſoil, and raiſe mounds of good earth, ſufficient to cover the roots and eſtabliſh the tree; which, being thus fed, till it acquire its former ſtrength and hardineſs, will afterwards put up with coarſer fare. Beſides, the trees thus propagated, will not incline to run downwards, as thoſe planted young ever do, but will ſpread their roots near the ſurface, within the influences of the ſun and rains, and pick up all the good nouriſhment the place affords. This elevation of the trees, in parks, clumps, or lawns, has likewiſe a very agreeable effect.

Tho' I have mentioned particular waterings, it may not be amiſs, in general, to obſerve, that all large trees muſt be watered at tranſplanting: If in October, once gently will do till ſpring; from which time, it ſhould be continued till Auguſt every month, at leaſt in dry weather, or rather when it does not rain plentifully; but thoſe planted in the ſpring, will require both more frequent and abundant waterings than the former. I would not however have it underſtood, that the directions given for large proportions of water to thoſe old trees, ſhould be practiſed on the younger; to them it ſhould be given frequently indeed, but very

gently, as over-watering moſt kinds of young trees, is generally more deſtructive, than giving them none at all: Let it alſo be an eſtabliſhed principle, that, from having begun to water ſeedlings, or other ſmall and delicate plants, you regularly continue it as the weather requires, otherwiſe you'll do more harm than good.

I SHALL ſay no more on the culture of this noble, beautiful, and uſeful tree, than that it well deſerves our utmoſt care and attention to bring it to perfection, for which it will amply repay us, both in pleaſure and profit; therefore, I again recommend, that, at all the ſundry removals, but particularly the latter, the utmoſt care be taken to preſerve as much of the old earth as poſſible to the roots, which will much accelerate their puſhing out freſh ones immediately; for this earth being already applied, and fitted to the mouths of the fibres, if diveſted of it, it will require ſome time to bring them in appetite again to a new mould, to repair their loſs, furniſh their ſtock, and proceed in their wonted œconomy without danger and interruption.

I HAVE often been ſurpriſed, that ſome authors of deſerved reputation, mention the French and Dutch Elm as trees of neither uſe nor beauty; and I can account for it in no other way, than their having miſtaken ſome other ſpecies of theſe trees for the true French and Dutch Elm. Having made theſe obſervations early in life, the Elm being ever a favourite tree with me, I was determined to be ſatisfied in this point, and the moſt likely way to be ſo, I thought, was to have them from France and Holland. This I did, and brought the French Elm from Paris, and the Dutch from Rotterdam, which were the mother-plants of all

I have ever ſince raiſed of theſe kinds. The French Elm, planted in ſuch ſoil as has been here directed for it, I think a beautiful tree; it grows faſt, and the wood, though not quite ſo hard as that of the Engliſh and Scots, is yet a valuable timber, and not much inferior to them. The Dutch Elm, tho' inferior in beauty and elegance of form to that, is, notwithſtanding, a very valuable tree, and, in this climate, and much of the ſoil of Scotland, ought to be highly cheriſhed, and become a common plant amongſt us, as it will ſucceed in wet obſtinate clay, where no tree I know of equal uſe, and few but aquaticks, will grow freely, but in ſuch places it will ſoon become a ſtately tree; and though the wood is not equal to the other mentioned kinds, it is ſtill a uſeful wood, and is often indiſcriminately ſold to the carpenter with them, from their near reſemblance.

In Scotland, the dealers in, and manufacturers of timber, are partial, or ignorant with regard to the Scots Elm, believing it better wood than the Engliſh: But this, to my experience, is by no means the caſe; for having cut down many of theſe trees, I have frequently weighed a cubic foot of the one and the other, cut at the ſame time, and always found the Engliſh the cloſſeſt and moſt ponderous.

I have ſold Engliſh Elms of my own raiſing, at twenty-four years growth, for a guinea the tree, and theſe not pick'd from quantities, but a whole line of them, above ſixty in number: They were generally about eighteen inches diameter, a foot above ground, and forty feet high.

CHAPTER II.

THE BEECH TREE.

The SPECIES *are:*

1. The common BEECH.
2. The yellow-ſtrip'd BEECH.
3. The white-ſtrip'd BEECH.

THE common method of raiſing theſe plants, is, ſowing their ſeeds in beds, very thick, early in the ſpring, and letting them ſtand two years; or, by drawing a part of them the firſt and ſecond year, leaving the remainder till three years old: But this, however general, is a very bad practice, as the plants thus drawn have moſt of their tender fibres torn away, (an injury they will not ſoon recover); and what remains, will be carrot-rooted, and ſuffer much, by the neceſſity of ſhortening theſe roots (then hard and woody) before tranſplanting them. I ſhall therefore leave the beaten path, and direct the practice I have found moſt ſucceſsful in the culture of this tree, and bringing it ſooneſt to perfection.

BEING provided in maſt from the ſtraighteſt and freſheſt trees, as ſoon in autumn as the huſks are quite dry, mix them with ſand, and lay them under an old frame, or other covering, to-

protect them from froſt and wet. This will prepare the ſeeds for vegetation, and diſappoint the mice, who generally have a large ſhare of them when early ſown.

In the beginning of March, ſow them thin in ſhallow drills, about eighteen inches aſunder; and if the ſeaſon is dry, and water at no great diſtance, give them frequent but moderate waterings, from their beginning to appear above ground, till the middle of Auguſt, which will much forward the growth of the plants.

In March, next ſeaſon, with a ſpade made very ſharp for the purpoſe, undermine the roots as they ſtand in the drills, and cut them over between four and five inches under ground.

The following autumn, or ſpring, you may either raiſe the whole, or give them another cutting below ground, when gently raiſing ſuch as are too thick, leave the remainder, at proper diſtances, to ſtand another ſeaſon. This manner of cutting the roots dexterouſly, has, in a great meaſure, the ſame effect as tranſplanting.

Thoſe you have raiſed, after ſmoothing the bruiſed and broken roots, and cut away ſome of the ſmall hairy fibres, muſt be planted in lines two feet aſunder, and nine or ten inches in the line; and if the ſoil is good, and the plants have grown vigorouſly, they ſhould remain here only two years, but in poor land they may continue three.

Thoſe left in the drills where ſown, are, next autumn, or ſpring, to be treated as theſe.

I MUST here obſerve a general error in the management of of the Beech Tree at this age, which is, trimming off all their ſide-branches, and planting only the bare ſtem. This is doing the greateſt violence to theſe plants, and what, if ever, they will not for ſeveral years get the better of, as no tree I know admits leſs of being pruned at tranſplanting, particularly when young, they conſtantly turning hide-bound and ſtunted when that is ſeverely done; therefore, nothing but very croſs ill-placed branches (and even theſe ſparingly) are to be touched at this time.

FROM this nurſery they muſt be removed to another, and planted in lines three and a half feet aſunder, and eighteen inches in the line, where they may remain, if in good ſoil, three, but in poor land four years; obſerving always to prune moderately at removal, and leave abundance of ſmall branches to increaſe their bodies.

AT this period, theſe plants will be fit for common and extenſive plantations; but ſuch as are deſigned for removal, when large trees, muſt undergo more diſcipline.

THESE muſt now be removed to another nurſery, and planted in lines five feet aſunder, and two feet diſtance in the line, to remain in good ground three, but in poor four years.

FROM this remove them again, and plant them eight feet aſunder line from line, and ſix feet in the line, to remain four years.

FROM this nurſery, if required of a larger ſize, remove them to fields, planting them ten feet aſunder every way, to be ready for

your future deſigns; and manage them hereafter as has been directed for the Elms.

As it has been obſerved, no deciduous tree agrees worſe than this with pruning at removal, to which may be added, wounding them, by cutting off large branches, the beſt method of treating them, is to reduce them to their proper form by regular prunings in the nurſery, particularly the ſeaſon before they are tranſplanted; by regularly obſerving which, and keeping them in a proper degree of moiſture, they will not be ſenſibly retarded in their future growth.

The ſorts with variegated leaves, are propagated by budding them on the common kind.

This valuable tree, for lofty eſpalier hedges to incloſe and warm gardens, or for hedge-rows ſoon to ſhelter barren fields, has hardly an equal, and, by retaining its leaves all winter, affords the ſame protection as an evergreen: It is therefore amazing it ſhould not be more univerſally planted in the cold, bleak, and mountainous parts of the kingdom, where it will grow in the pooreſt, ſtonieſt, ſandy, and gravelly grounds, and inſinuate its roots into places one would think impenetrable to any plant. It is, beſides, a tree of great beauty; and though the wood is not ſo valuable as that of ſome others, it brings a price, and is fit for many uſeful purpoſes; and for fuel, it is the beſt of any wood we have in this climate.

Chapter III.

Platanus; or, The PLANE TREE.

The Species *are:*

1. The true Oriental Plane.
2. The Maple-leav'd or Spanish Plane.
3. The Weſtern or Virginian Plane.

THE firſt ſort is uſually increaſed from layers, though, where the ſeeds can be procured, the plants raiſed from them make the fineſt trees.

If they are propagated from layers, let them be laid down the beginning of March, and in a year's time they will be ſufficiently rooted.

If from ſeeds, ſow them in the autumn as ſoon as the ſeeds are thoroughly dry, in a moiſt rich ſoil, and ſhady ſituation. In the winter, ſcreen the beds with peaſe-ſtraw, rotten tanners bark, two or three inches deep, or ſome other light covering that can eaſily be removed in mild weather, to prevent the ground, for want of air, from contracting a muſtineſs, which might deſtroy the ſeeds. In the ſpring following, before the ſeeds vegetate, rake the beds gently over with a ſhort-teeth'd rake, ſifting a little freſh rich mould on them, in proportion to what has been raked off; and, in dry weather, during the ſummer months, let

them be regularly refreſhed with water. The following autumn, the beds having been made quite clean, and looſened with your finger, ſo as not to diſturb the plants, put a little more good mould about them with your hands, after which they will require no further trouble; but keeping them clean, till they have had another ſeaſon's growth; by which time, let them be removed to the nurſery the ſucceeding ſpring.

THE ſecond ſort, though by many ranked as a diſtinct ſpecies, Mr Miller (and I believe juſtly) thinks only a ſeminal variety of the firſt; though the leaves are leſs divided than it, but more than the weſtern kind; this may eaſily be increaſed by layers.

THE third ſort grows freely from cuttings, which ought to be planted the beginning of March, in ſhady borders of rich moiſt earth, two feet line from line, and eight or ten inches in the line; and if they are torn aſunder at the joints, with a knob or bur of the old wood left, they will grow more readily, and ſooner become ſtrong plants, than the others. Theſe cuttings ought to be a foot or fourteen inches long, buried about eight inches deep, and moderately watered till their ſhoots are two or three inches long, where they ſhould remain two years. The leaves of this kind are broader, and leſs indented than the other two ſorts; it is likewiſe hardier, grows faſter, and to a greater magnitude in this climate: So that in large plantations, or in expoſed ſituations, I would adviſe the greateſt quantity of them to be planted.

THE ſeedlings, layers, and cuttings, are now all to be treated in the ſame manner, and planted out in the nurſery, in lines

three feet and a half aſunder, and eighteen inches diſtance in the line: Let them get a plentiful watering at removal; cut away the extremities of their roots, with all ill-placed over-crowded branches, and let them continue here three years.

FROM this remove them to another nurſery, and plant them in lines ſix feet aſunder, and three feet in the line, where they may ſtand ſix or ſeven years without removal, if choſen, as this tree naturally produces abundance of roots with little culture. In this nurſery let the ground be annually dug, as for other trees, and regularly pruned to the form you would have them: By obſerving which, after you have planted them out for good, your labour is properly over, as they will require little or no pruning ever after, but advance in a regular and beautiful manner, without the aſſiſtance of art.

THE proper ſeaſon of tranſplanting this tree is in the month of March, when, and during the ſummer months, if the ſeaſon is dry, they ought to be plentifully watered, particularly if the ſoil is light and thin; for though this is a very hardy plant, yet, by removing them in autumn or winter, if the ſeaſon ſhould prove very ſevere, the extremities of the preceding ſummer's ſhoot are ſometimes blaſted, which diſfigure them a little the ſucceeding year.

THE *Platanus* will grow in any tolerable ſoil, but they naturally delight in a moiſt deep ground; therefore, when planted on that of an oppoſite quality, they ſhould be plentifully watered for ſeveral ſummers, which they will gratefully acknowledge, by the luxuriance of their growth.

THIS beautiful and magnificent tree is ſaid to have been firſt introduced into England by the great Lord Chancellor Bacon, who planted a large parcel of them at Verulam, near London, which were very flouriſhing there a few years ago. The great eſteem the antient Perſians, Aſiatics, Greeks, and Romans, (who brought it from the Levant) had for it, is recorded by many hiſtorians, as that of its ſalubrious emiſſions having prevented the plague at Iſpahan in Perſia, which, after a number of them were planted, had not come near their dwellings, though for many centuries it had made dreadful ravages in that great city. The ſtory of Xerxes halting his army of ſeventeen hundred thouſand men, for ſome days, when on his march to invade Greece, to admire the beauty and magnitude of one of theſe venerable Planes, is well known; as is that of the Romans moiſtening them with wine inſtead of water. But a relation at large of theſe, and many other ſuch circumſtances, would exceed the bounds of, and be unneceſſary in a work of this kind: It is therefore ſufficient here to obſerve, that the high eſteem in which theſe ancient nations held this noble tree, appears to me a ſtrong argument of their refined taſte and judgment; and I am heartily ſorry to ſay, that the neglect of its general culture in thoſe kingdoms is a reflexion on ours. It affords the moſt glorious ſhade of any tree yet known; and Pliny juſtly obſerves, there is none which ſo well defends us from the heat of the ſun in ſummer, or that admits it more kindly in winter.

THE Italians and Turks uſed formerly to build moſt of their ſhips with this timber; and they had them of ſo enormous a ſize, that whole canoes, and other veſſels for the ſea, have been excavated out of their prodigious trunks. It is hard, cloſe, takes a fine poliſh, and is valuable for a variety of uſeful purpoſes.

CHAPTER IV.

THE MAPLE TREE.

The SPECIES *are:*

1. The greater MAPLE, in England falſely called the SYCAMORE, and in Scotland the PLANE TREE.
2. The Norway MAPLE, with Plane-tree leaves.
3. The Virginian Flowering MAPLE.
4. The American MAPLE, with Scarlet flowers.
5. The Virginian Aſh-leav'd MAPLE.
6. The Common or Leſſer MAPLE.
7. The Greater MAPLE, with ſtrip'd leaves.
8. The Norway MAPLE, with ſtrip'd leaves.

THE two firſt mentioned ſorts being the largeſt growing and hardieſt trees, are of courſe moſt proper for extenſive plantations and expoſed ſituations; for which reaſon, I ſhall firſt direct the culture of them till of conſiderable ſize, and then proceed to the other ſorts.

THEIR ſeeds ripen in autumn, when they muſt be gathered in fair weather, and ſpread in an airy place till thoroughly dry, which may probably be in four or five weeks time. The general practiſe is, to ſow them at this time; but, from long experience, I have found it better, and have raiſed more, and finer plants, to mix the ſeeds with ſand, or looſe ſandy earth, and keep them defended from ſevere froſt, or much moiſture, till

February, or the beginning of March, as the weather is more or leſs favourable about this time: If not ſtrait'ned for land, ſow them in drills, as has been directed for the Beech, but thinner; if otherways, let them be put in beds only eighteen inches broad, with alleys the ſame wideneſs, and cover them about three quarters of an inch thick.

The following February or March, dig the alleys, and cut their roots about five inches under ground, which, with a ſharp ſpade, may with eaſe be performed; and draw a conſiderable quantity of the largeſt plants where too thick, (which, if the ground is good, and has been properly dreſſed and kept clean, moſt of them will be); let theſe be planted in good mellow ſoil, in drills cut out with the ſpade quite perpendicular, that the plants may ſtand upright; let the lines be eighteen inches aſunder, and the plants placed at eight or nine inches diſtance in them; and here they ſhould only remain one year, the ground being tolerably good.

In the following October, when the plants will be in general two feet high and upwards, let them be raiſed, both the ſeedlings, and theſe that were tranſplanted; ſhorten their top-roots, cut off any croſs lateral branches, and remove them to another nurſery, where they ought to be planted in rows, two and a half feet aſunder, and 15 inches in the row, to continue two years.

From thence remove them again, at the ſame ſeaſon, and plant them in rows five feet aſunder, and two and a half feet in the row, where they may continue four years.

These, in an ordinary ſoil, will now be from twelve to fifteen feet high, and, if required of a larger ſize for future purpoſes,

may be removed to any convenient ſituation, and planted eight or ten feet aſunder; when, any time after two, and not exceeding eight or ten years, they may be placed where deſigned to remain: And if, during that time, they have been ſkilfully pruned, and, by that, brought to their proper form, carefully raiſed, and moderately watered at planting, which, in a dry ſummer, may require being two or three times repeated, your labour with them is at an end.

I HAVE directed both ſpring and autumn planting for this and other trees; the reaſon for which is, that tho' the autumn is preferable for moſt of the deciduous kinds, when ſtrong and well-rooted, yet theſe ſame kinds, planted in the autumn, or winter, when young, and before they have got ſufficient roots, are apt to be injured by froſt, and ſpewed out of the ground in ſevere ſeaſons.

THE cauſe of ſo frequently removing theſe trees when young, is, that they naturally grow with downright carroty-roots, tho', after undergoing the diſcipline here preſcribed, no plant roots better, or is more patient of tranſplanting to a large ſize.

THERE is no tree, yet known in this climate, ſo proper to be planted near the ſea, as the Great Maple, where I have known it grow luxuriantly, after many other kinds have been tried in vain; and, in a few years, their ſhelter will cheriſh and bring forward many hardy ſorts, which no art will otherways effect.

THIS tree, however otherways valuable, ſhould not be planted near the houſe, or by the ſides of walks that are intended to be finely kept; for their leaves exude a ſweet clammy juice that entices great quantities of inſects, who eat them full of holes,

and make them unſightly; beſides, the leaves falling early in autumn, turn to mucilage, and putrify with the firſt moiſture of the ſeaſon, ſo as they contaminate and ſpoil the walks, rendering them both diſagreeable, and expenſive to clean.

I HAVE not had the opportunity of planting the Norway Maple near the ſea, but, in many other ſituations, I have planted them in concert with the common large ſort, and found them equally hardy, and of as free a growth: They are a much handſomer tree, and their leaves have not the noxious qualities of the other.

THE third, fourth, and fifth ſorts, are pretty trees, and proper for the wilderneſs, and other ornamental plantations, but ſhould not be planted ſingly, or in cold expoſed ſituations in this climate, as they commonly ſuffer much, both by the violence of the weſterly, and coldneſs of the north and eaſt winds. They may be propagated from ſeeds as the former kinds, when theſe can be procured; but as they are not ſo generally to be had in this country, they ſucceed readily by layers, which, laid down in autumn or ſpring, will be ſufficiently rooted in twelve months.

HAVING carefully raiſed your layers, and dreſſed them as directed for others, plant them out in a quarter of good well-prepared ground, in rows, three feet aſunder, and a foot diſtance in the row; let them be watered, to ſettle the earth about their roots, and remain here two or three years, from whence remove them to where they are meant to remain for good.

THE common or leſſer Maple, which produces abundance of ſeeds with us, is eaſily propagated from them, in the ſame way as the larger kind, and may be ſown in beds three and a half

feet wide, according to the common practice, and, from the ſeed-bed, at two years old, planted in the nurſery for two years more, in lines, two feet aſunder, when they will be fit for the purpoſes deſigned. This is a tree of humble growth, ſeldom riſing above twenty-five or thirty feet high, and therefore not generally uſed in large plantations of timber trees, but is very common in the hedge-rows over moſt parts in England.

The large ſtrip'd Maple, is commonly propagated by budding it on the plain kind, and may alſo be raiſed from ſeeds, many of which will be as finely variegated as the trees that produced them; a circumſtance very uncommon in other variegated plants, which rarely produce their own likeneſs.

The ſtrip'd Norway Maple, is alſo propagated by budding it on the plain kind, and is a finely variegated tree, tho' I cannot ſay that the ſeeds of them will produce variegated plants, never having been able certainly to procure them of the true kind, tho' I have frequently ſown them as ſuch ineffectually.

These trees, the firſt, ſecond, and ſixth ſorts particularly, will proſper in very indifferent coarſe land, but moſt affects that which is deep and moiſt, tho' not wet or ſtiff; in ſuch places they will make ſurpriſing progreſs, and in a few years become ſtately trees. The third, fourth, and fifth ſorts, delight moſt in a firm dry mould.

The various uſes of this tree to the turner, for diſhes, drinking-cups, bowls, and trenchers, and to the joiner for tables, *&c.* are too generally known to require a particular relation here; but that of the common leſſer Maple, is much the beſt wood of all the kinds we yet know.

CHAPTER V.

THE OAK TREE.

The SPECIES *are:*

1. The common OAK.
2. The broad-leav'd OAK.
3. The Virginian Scarlet OAK.
4. The Virginian OAK, with chefnut leaves.
5. The black Maryland OAK.
6. The white OAK of Carolina.
7. The OAK with woolly leaves.
8. The Chefnut-leav'd Eaftern OAK, with a thick fcaley cup.
9. The broad-leav'd Eaftern OAK, whofe leaves are finely cut, with a large acorn, and hairy cup.
10. The Champion Chefnut OAK.
11. The red Maryland OAK.
12. The willow-leav'd Maryland OAK.
13. The Burgundy OAK.
14. The gall-bearing OAK.
15. The cut-leav'd Spanifh OAK.
16. The fwamp Spanifh OAK.
17. The ftrip'd OAK.

THERE are many other kinds of Oaks mentioned in the catalogues of different writers on botany and gardening, but thefe, here felected, I have found, from experience, the moft

diſtinct ſpecies, and fineſt trees of that tribe I have ſeen; many of the others having little beauty, and ſome of them being only ſeminal variations: I therefore thought it unneceſſary to enumerate more, as all the ſorts may be propagated in the manner here directed.

The ſix ſorts firſt mentioned are trees of the largeſt growth, and therefore ſhould be planted where ſuch are required; the others, being of more humble ſtature, may be confined to the wilderneſs, or ſmaller deſigns: But as the wood of the common Engliſh Oak is much preferable to any of them we yet know, ſo the foreign kinds ſhould only be propagated in ſmall quantities, for ornamental purpoſes, at leaſt till their virtues are better known.

This tree is uſually planted out for good when very young, from the general belief, that it will not ſucceed at any conſiderable age; and indeed, from the common methods of its culture, the obſervation is too well founded: But by following better rules, which I ſhall here endeavour to give, and which are the reſult of very conſiderable practice, it will tranſplant with certain ſucceſs to a large ſize.

No tree requires more addreſs, to make a handſome well-proportion'd free-growing plant, than the Oak; none is more neglected, tho' none more worthy our attention. It is rare to ſee a ſtraight uniform plantation of them, but where they are crowded very thick together, or drawn up by the ſhelter of other plants.

The common method of raiſing Oaks, is, by ſowing them in beds, very thick, and in that condition letting them ſtand two,

and ſometimes three years. They are naturally carrot-rooted, and run ſtraight down into the earth, with few, and ſometimes no fibres; and by ſtanding in this ſituation for that time, they are drawn up tall and ſlender; and their roots having become hard and woody, the cutting away of theſe roots, to a proper length, which they muſt neceſſarily be, becomes a very violent operation on the plants; by which means many of them fail, and the remainder, from ſo ſevere a check, will be ſeveral years in gathering roots, and of courſe, during that time, will be ſtunted, croſs-growing, and ſhrubby: But, to remedy theſe evils, purſue the following ſyſtem, from the obſervation of which I have long been ſucceſsful, in rearing many beautiful, ſtraight, and well-proportioned Oaks.

HAVING provided yourſelf with acorns in the autumn, gathered from the handſomeſt and moſt vigorous trees, in fair weather, ſpread them in an airy covered place, and turn them frequently till quite dry; when you find they are ſo, mix them with ſand, or looſe light earth, and let them be protected from vermin, froſt, and moiſture, till about the middle of February.

AT this time, or as ſoon after it as the weather will admit, prepare, by a clean digging and raking, a ſpot of good natural ſoil; and, to render the crop equal and uniform, try the goodneſs of your ſeeds, by throwing them into a tub with water, when the freſh will ſink to the bottom, and the rotten or defective float on the ſurface. The quality of the acorns being thus aſcertained, make ſhallow drills acroſs the ground, with a ſmall hoe, at eighteen or twenty inches diſtance; and in theſe drop your acorns, about two inches ſeparate, covering them, with the back of a rake,

two inches deep; let the ground be raked ſmooth, and kept clean and mellow during the ſummer months.

THE beginning of April, the ſucceeding ſpring, cut them under ground as directed for the Beech, and let them remain till the ſpring after.

FROM this ſituation, as ſoon as their buds begin to ſwell, let them be carefully raiſed, without tearing their roots or fibres; and ground being ready, ſeparate the ſtraight free-growing plants from the crooked and ſhrubby; ſhorten any downright or bruiſed roots, but be very ſparing of the ſmall fibres; and plant the ſtraight trees in one quarter of the nurſery, in rows, two feet aſunder, and nine inches in the row; and the crooked ones in another, at the ſame diſtances: Let theſe plants be as little time as poſſible out of the ground; for this purpoſe, raiſe few of them at a time, and if you have the command of four men, they will ſuddenly diſpatch a great number of them, that is, by one man raiſing the plants, another pruning them, and giving them to the planters, and two planting.

IF the land is good, and the ſeaſons have been kindly, the ſtraight plants may be removed in two years; but when either of theſe circumſtances is otherways, they may continue three ſeaſons.

THE crooked and bruſhy trees, having ſtood two years in the nurſery, muſt be cut over by the ground, and remain two years longer; and obſerve, that, as ſoon as their ſhoots are four or five inches long, you pinch off all but the moſt promiſing one; from

whence the whole ſtrength and juices of the root will be exerted in the ſupport of this ſingle ſhoot.

ANOTHER method of raiſing theſe trees, with equal ſucceſs, is, ſowing the acorns on beds, in rows, ſeven or eight inches aſunder, and two or three inches in the row, covering them the uſual depth, and letting them remain only one year.

FROM theſe beds remove them the following ſpring, and having ſhortened their top-roots, lay them in lines, cut down perpendicular with the ſpade, eighteen inches aſunder, and eight or nine inches in the line, where they may continue two years.

FROM thence remove them, ſeparating, as has been ſaid, the ſtraight from the crooked, and plant them in different quarters, in rows, two feet and a half aſunder, and one foot diſtance in the row; the ſtraight plants to continue here three years, and the crooked, if they have grown freely, to be cut over in one, but if otherways, not till two years; and here they ſhould remain three years longer.

MANY writers of reputation direct ſowing the acorns, as ſoon as thoroughly dry, in October or November, the principle of growth being ſo ſtrong in them, that they are apt to ſhoot ſoon after, tho' not in the ground, and with that ſhoot will decay. This, they ſay, is the order of nature, and I readily admit it is ſo; nor do I condemn their practice: But I have found, from innumerable inſtances, the method before directed will produce better-rooted and cleaner plants; and how indeed can it be otherways? for, muſt not the ground, which, as it ought, we muſt ſuppoſe has been well trenched or dug the preceding autumn, mellowed and

inriched during winter with the heavenly influences, and again in the ſpring dug and laid down ſweet and looſe,—muſt not the ſoil in this condition, I ſay, nouriſh every plant in a much higher degree, than that laid down in autumn, hardened and battered with the winter rains? And tho' many of the acorns will vegetate before ſowing, yet that vegetation is preſerved by the mixture of ſand or looſe earth, and, before February, will make no advance, tending to impede, but, on the contrary, will forward the future growth of the plant; only let it be carefully attended to, that the acorns have not the ſmalleſt degree of moiſture about them when mixed, that the mixture is alſo dry, and that they are kept protected from wet.

GARDENERS, in general, have the ſpecious word *nature* eternally in their mouths, and no doubt there is a great deal in it, when properly underſtood and applied; but the herd of them knew nothing of either, and the true application of it in gardening, requires good ſenſe, joined to much obſervation and experience: But be that ſo, or otherwiſe, was not nature deſigned to be modified and improved by art in many things? If it was not, many ſound heads have in vain perplexed themſelves in the ſtudy of gardening.

BEFORE proceeding to the further culture of the Oak, this may be a proper place to take notice of the general, or almoſt univerſal ill practice of nurſerymen, dibbling their plants of one and two years old, or indeed as large as the dibble, with hard thruſting, will make room to contain them. Dibbling is hurtful, in a high degree, to the whole ſpecies of trees and plants; but to the Oak, and all the nut-bearing carroty-rooted kinds, it is

doubly deſtructive, particularly in ſtrong ſtiff ground. Common reaſon, one would readily believe, ſhould point out the abſurdity of this practice to every gardener of obſervation; notwithſtanding which, I do not remember any author who warns us againſt it, but, on the contrary, many direct it for general practice. If a man, however, reflects but a very little, he muſt be ſenſible, that the roots of plants, ſqueezed into a hole made hard by the ſtrong preſſure of a dibble, muſt neceſſarily retain the moiſture in wet weather, to ſuch a degree, as to endanger the rooting of the roots, and that in dry weather this hole will become ſo hard, as to prevent the tender fibres from extending themſelves, and procuring proper nouriſhment; ſo that if the plant lives, its roots are compreſſed into a ſmall hard cluſter of mouldy fibres, which nothing but ſevere pruning a great part of away, and different removals in good ſoil, will ever recover to a vigorous ſtate. Nothing can excuſe this practice in ſenſible nurſerymen, but its being done at leſs expence than laying them with the ſpade; and that they are in ſome meaſure forced to it, from the ignorance and avarice of untutor'd upſtarts, who aſſume the name of nurſerymen, and take every opportunity that the worſt practice preſents, ſo it be cheap, of under-ſelling the ſenſible, honeſt, induſtrious gardener, and cheating the unſkilful purchaſer, no regard being paid to the quality of the plants.

NEITHER is the ill effect of dibbling confined to trees alone, but extends to many of the herbaceous plants, and other vegetables, which ſuffer in the ſame proportion. I have often made the experiment of this in Cabbages, Collyflowers, Potatoes, *&c.* planted on the ſame ground, the ſame day; and 'tis amazing how much larger thoſe were, put in with the ſpade or trewel,

looſely, than theſe dibbled: In ſhort, too much cannot be ſaid againſt this barbarous method of treating trees; which, if it prove not their immediate grave, will at leaſt continue to be their priſon. But I ſhall now return to the further culture of the Oak.

THIS tree, having been managed as here directed, will be of a proper age and ſize for being removed to large plantations for good, and, from the abundance of their roots, and good proportion of their bodies, will reſiſt the moſt violent winds; but ſuch as incline to provide large trees of the common Engliſh Oak, for future purpoſes, muſt proceed farther, as follows:

HAVING fixed on a ſpot of good mellow ground, that has been well dug the preceding autumn, about the end of March, or beginning of April, give it another digging, level it well, and pick out all remaining ſtones and root-weeds from it. As ſoon as their buds begin to ſwell, raiſe ſuch trees (which ought to be the ſtraighteſt and fineſt) as you intend to cultivate further in the nurſery way; ſtill continue to ſhorten ſuch roots as tend downwards, and ſmooth the ſpreading ones that are long, or have been wounded with the ſpade in raiſing them; and where there are abundance of fibres, you may likewiſe cut away ſome of the ſmalleſt, which, if the trees are not immediately planted, will decay, and ſometimes bring a mouldneſs about the principal roots: You muſt alſo cut off all ill-placed croſs branches from their bodies, leaving only a few of the ſmaller, at proper intervals, to detain the ſap, for the augmentation of the trunk; and let not a bud of the leading ſhoot be ruffled, as that is difficult to repair in the Oak, by any other means than cutting over the tree. Let theſe operations be done in the gentleſt manner, not ſhaking the plants, that as much earth as poſſible may continue about their roots.

THE trees now properly prepared, plant them in lines, five feet aſunder, and two feet and a half in the line; give them a plentiful watering, to ſettle the earth to their roots; and if you repeat this once a fortnight for three or four times, the ſeaſon being dry, it will much promote their growth. In this nurſery they may remain, in good generous land, four, but in poor and hungry, five or ſix years: Let the ground be annually dug between the lines, and the trees pruned every ſpring, with the ſame care and attention as at removing them. I cannot here leave the article of pruning, without begging to be a little further indulged, in obſerving, that no circumſtance is attended with worſe conſequences to plantations of trees in general, than the neglect of timely and regular pruning when young; and what muſt render it quite inexcuſable, is, that even in ample plantations, the expence is very trifling, when annually performed. The cutting of young and tender branches can have no ill effect, either on the life or growth of the tree; but the wounds made by lopping off old wood, always much weakens, and often produces a gangrene that proves mortal, in ſome kinds by exceſſive bleeding, and in others, by imbibing moiſture, and communicating it to the body. Theſe are truths founded on nature, reaſon and experience, and which ought to warn all planters to a due performance of this operation, as, from the judicious practice of it, joined to the other articles of culture mentioned, the plants are not only preſerved in a healthful free growing ſtate, but may be formed to any ſhape or proportion you pleaſe, their nature will admit of; but which neglected a few years, no future diſcipline will reduce to fine plants. But if Oaks have been neglected, and grown rude, the beſt ſeaſon of cutting their large branches is in March; for the young and tender, any time from autumn till ſpring is equal.

The trees from this culture will now be finely rooted, ſtraight and well-proportioned, and, in an ordinary ſoil and ſituation, from ten to twelve feet high; and thoſe firſt cut over, will be the largeſt and handſomeſt plants.

But to make them proper for tranſplanting at a larger ſize, remove them again to any convenient ſpot of tolerable ground, managing the roots as formerly; and plant them in lines, eight feet aſunder, and ſix feet in the line, watering them plentifully when planted; where they may continue ſix or ſeven years, by which time they will be about twenty feet high.

If ſtill a reſerve of larger is wanted, remove them once more, and plant them twelve feet aſunder; give them an abundant watering at planting, and repeat it three or four times, more or leſs as the nature of the ſeaſon requires. In this ſituation they may continue, ready for whatever new deſign occurs, for eight or ten years, when, by a careful removal, and four or five plentiful waterings the firſt and ſecond ſummer, they will grow as luxuriantly as if they had ſtood in the ſame ſoil from the ſmalleſt ſize, and arrive as ſoon at full maturity, with this advantage, that the trees, from the regular and timely prunings they have had, muſt of courſe be formed to their proper ſhape, and will require little or no further trouble.

Tho' moſt of the deciduous trees, particularly large plants of them, ſucceed beſt, being planted in autumn, the Oak is one exception to this rule, and is found univerſally to remove with more ſafety, and grow more freely, when tranſplanted in the ſpring; therefore this ſeaſon ſhould be invariably obſerved, as, in wet, or even moiſt ſwampy lands, I have often known large

plantations of them almoſt totally deſtroyed by autumnal, or winter planting.

THIS noble tree, the monarch of the woods, the boaſt and bulwark of the Britiſh nation, will grow freely in a great variety of ſoils, now either altogether waſte, appropriated to the production of meaner trees, or other more ignoble purpoſes. This proceeds from not attending to its nature and properties, by making the experiment of planting it on all the various ſoils; for though, like the greateſt part of other trees, it (particularly at firſt) affects a ſound deep mould, it will, notwithſtanding, proſper exceedingly on the coarſeſt moiſt gravel, loam and ſand, or ſtiff heavy clay and till (which moſt other trees abhor), and that too when theſe ſoils are ſo ſteril and hungry as not to afford grazing for ſheep.

THE ſtrip'd Oak, is propagated by budding or grafting it on the common kind, and is a very beautiful variegation, which I have much improved, both in the brightneſs of the colours, and ſize of the leaf, by joining it to the ſcarlet Virginian, and cheſnut-leav'd kinds.

THE tenderer kinds of Oaks will be rendered more hardy, and the dwarf kinds improved in ſize, by grafting and budding on the common ſort, which, to thoſe who incline to have all the ſpecies of this fine plant in its greateſt perfection and beauty, is well worth the trouble of theſe operations.

THE value and uſes of the wood of this tree, are ſo univerſally known, that it would be an inſult on the underſtanding of the meaneſt mechanic, to employ time in relating them here.

CHAPTER VI.

THE ASH TREE.

The SPECIES *are:*

1. The common ASH.
2. The Manna ASH.
3. The Virginian flowering ASH.
4. The New-England ASH, with ſharp-pointed leaves.
5. The Carolina ASH.
6. The white American ASH.
7. The black American ASH.
8. The red American ASH.
9. The white-flowering ASH.
10. The ASH with ſtrip'd leaves.

HAVING gathered the keys of the common Aſh, in fair weather, about the beginning of November, from handſome vigorous trees, ſpread them in an airy loft or covered place, turning them frequently till quite dry, which, in a proper ſituation, they will be in three or four weeks time; then mix them with looſe ſandy earth, and let them be protected from wet till the following ſpring, when they ought to be ſown about the beginning of April, on well-prepared freſh mellow ſoil, on beds three and a half feet broad, with alleys eighteen inches between the beds, and covered three quarters of an inch deep. Theſe ſeeds will not appear above ground till the ſucceeding ſpring,

during which time it muſt notwithſtanding be kept quite clean, and as looſe and little poached as poſſible; and in February, before the ſeeds begin to ſpring, let the ſurface of the ground be gently raked over, removing all muſty and foggy particles they may have contracted during the winter, and throw a little freſh rich mould over them, to replace what you have taken away, which will much promote the future growth of the plants. In this ſeminary the trees are to remain only one year.

HAVING prepared another quarter of good ground in the nurſery, in the ſame manner as for the ſeed, the following February or March, remove them; keep them as ſhort time as may be out of the ground, to prevent the ſmall fibres withering, and cut away only the downright top-roots; lay them in drills, cut down perpendicular with the ſpade, as directed for other plants; let theſe drills be eighteen or twenty inches aſunder, and plant them at the diſtance of eight or nine inches in the drill; give them a gentle watering at planting, and continue it three or four times, at proper intervals, if the weather is dry; and here, giving them proper culture, let them remain two ſeaſons.

IN October, as ſoon as their leaves are tarniſhed, remove them from this nurſery; and having pruned off, cloſe by the body, all the ſtrong and ill-placed branches, ſtill leaving a number of ſmall ones to attract and detain the ſap for the augmentation of the trunk, plant them in another quarter of any tolerable ground, in lines, three feet and a half aſunder, and fifteen or ſixteen inches in the line, where they may remain three years, obſerving to dig the ground between the lines every ſpring.

By this time the trees, in an ordinary ſoil, will be about ſeven or eight feet high, ſtrong, well-rooted, and of a proper ſize to make extenſive plantations; but where a ſucceſſion of large ones are wanted, remove them every fourth year, pruning their roots and bodies as formerly, watering them at planting, and three or four times afterwards, in dry weather, every twelve or fourteen days, giving them greater intervals in proportion to their ſize, as directed for the Elm; from which management, they may be removed at any bulk you chuſe them, without any ſenſible check.

All the other kinds are propagated by budding them on the common Aſh, which being a large-growing hardy tree, will be a conſiderable improvement on the dwarfiſh and tenderer ſorts.

The Aſh ought neither to be planted in gardens, near other trees, nor in any mixt plantations. There is no plant I remember, that ſo ſoon, and ſo much exhauſts the virtues of the ſoil; and the ſhade is malignant to every production of the earth, being thus a ſtep-dame to other trees: Let them be planted in concert, where, notwithſtanding theſe unfriendly qualities, if properly managed, they will yield great returns of profit to the owner in a few years.

This tree will grow in very ſteril barren ſoil, and in the bleakeſt and moſt expoſed ſituations; but in a deep mould, tho' of no generous quality, and where there is no ſtanding water, it will quickly arrive to a great magnitude.

The wood of the Aſh (next to that of the Oak) is of the moſt univerſal uſe, particularly for all the implements of huſbandry,

It has alſo this ſingular advantage, that, when young, it is as ſtrong and laſting timber as that of old trees; but the value, and particular uſes of it, being ſo univerſally known, makes it unneceſſary to be related here.

I SHALL diſmiſs this uſeful, though not ornamental tree, in mentioning an experiment I made very early in life of its value, by planting a ſpecimen of them in copſe, intended principally to ſupply myſelf with poles for eſpalier hedges, and ſtakes for dead fences, for which purpoſes no wood is more proper or laſting.

FOR theſe ends, in very obſtinate heavy meadow ground, compoſed chiefly of ſteril red clay and moſs, I planted half a rood, or the eighth part of an acre, with Aſh trees ſix years old, and about eight feet high. I placed them in rows, four feet aſunder, and two feet diſtance in the row, where I let them remain untouched, only digging the ground about them every autumn, for four years, when I cut them over five or ſix inches above ground for the purpoſes meant, which they then fully anſwered, reſerving twenty of the faireſt plants, at proper diſtances, for trees.

I CONTINUED to dig the ground two years longer, and then left them to nature for five years more, that is, ſeven from their being cut down. Having more of them than anſwered my own purpoſes, or indeed than I could have imagined ſo ſmall a ſpot of ground would produce, I thought of making the moſt of what I had to ſpare, and accordingly meaſured off exactly one half of them, which I ſold for pollards and hoops, at forty ſhillings.

I CUT them again in ſix years more, which, being ſtronger than the former, I ſold for fifty ſhillings.

IN ſix years after this, I again cut them over, and though theſe were much the largeſt ſhoots, I ſold them at the ſame price as the laſt.

THERE remained now twenty trees on the whole ground, intended to ſtand for timber, ten of which grew amongſt the copſe I had ſold. My meaning was not to touch theſe till the decline of my life, that I might leave to poſterity what obſervations I was able to make, of the profit a man who begins to plant when young, may reap from it in his own time: But the croſs events of fortune diſappointed me; for, becoming ſecurity in conſiderable ſums for others, who failed in their affairs, I was obliged, by rigid creditors, to ſell my land, at which time my neceſſities alſo conſtrained me to ſell my trees of all kinds. I hope the reader will excuſe this digreſſion, which I believed neceſſary, to remove the juſt reflection every judicious planter would make againſt me, for cutting down hopeful trees at ſo early and unprofitable a period, if I could have avoided it. Thoſe trees I ſold, of twenty-three years growth, at ſeven ſhillings a tree, to a cart-wright, which was L. 3 : 10 s. for the ten trees on the copſe ground I had cut and ſold three times before.

THUS it appears, that an acre of indifferent ground (for mine was very bad) planted with Aſh trees in the manner deſcribed, near, or eaſily carried to any populous town, will yield, in twenty-three years time, L. 115 : 10 s. without any other expence than digging the ground for the firſt five or ſix years, and cutting

over the copſe, which is very trifling, and which the owner ought, in all events, to do himſelf carefully for his own ſake: Let them be cut, ſlanting, with ſharp inſtruments, leaving all the wounds ſmooth and clean, to prevent the wet from lodging in the ſtocks, from whence it might communicate to the roots, and contaminate the whole plant, and which a common purchaſer of the copſe would probably pay little attention to. The beſt ſeaſon for this work, is the month of February, before the ſap begin to riſe. I have not mentioned any price for the firſt cutting, having uſed them myſelf: Theſe were planted at eight feet high, and had ſtood four years from planting, ſo that, from the loweſt calculation, they muſt have been worth more than pay the whole expence of labour: To which I muſt add, that, after ſelling the laſt cutting of my copſe, I was informed by an honeſt man, a good judge of the value of that commodity, that I had been groſsly deceived by the purchaſer, and that I ſhould have received one-third part at leaſt more money than I did.

It is neceſſary to obſerve, for the benefit of ſuch as incline to follow this practice, which is ſurely worth attending to, as it might ſoon become a very profitable improvement, that, after the ſecond cutting, I found I had planted my copſe too thick, and that, had they been at greater diſtances, I ſhould have reap'd conſiderably more advantage from them: I therefore now, from experience, adviſe them to be planted in rows, ſix feet aſunder, and three feet in the row.

CHAPTER VII.

THE LIME TREE.

The SPECIES *are:*

1. The broad-leav'd flowering LIME TREE.
2. The red-twig'd LIME TREE.
3. The green-twig'd LIME TREE.
4. The ſmall-leav'd LIME TREE, of a tawny green colour both in the leaf and bark.
5. The ſtrip'd-leav'd LIME TREE.

THE firſt mentioned ſort is the fineſt plant of the ſpecies: The ſecond is next to be preferred; it has alſo large leaves, grows to be a ſtately tree, and the ſhining deep red colour of its bark has a chearful and agreeable effect in winter. The third and fourth ſorts are much inferior in beauty, and grow in a looſe and ſtraggling manner, nor ever make ſo ſtraight or lofty trees; they are therefore unworthy of propagation, in compariſon of the two former kinds; nor would I have named them, but to warn the planters of Lime trees to beware of the ſorts they purchaſe, as the nurſeries in this country generally abound moſt in theſe two laſt ſorts, which, perhaps, not being known to every nurſeryman, are all indiſcriminately raiſed and ſold together, and which, when placed by the ſides of walks, or in the ſtraight lines of avenues, from the irregularity of their form, and difference of growth, very much deface ſuch plantations.

THE Lime tree may be propagated by ſeeds, which are ripe about the end of October, and ſhould, after being quite dry, be mixed with ſand, and protected from froſt and rain, till the beginning of March; when they ought to be ſown in a ſhady border of rich, moiſt, loamy ſoil, in beds three and a half feet wide, with alleys of eighteen inches, and covered three quarters of an inch deep. When the ſeeds begin to peep, let them be frequently watered, and increaſe the quantity as the plants advance in growth: Let the beds, in autumn and ſpring, be managed as directed for other hardy ſeedling trees; and here let them continue two years.

THESE plants, raiſed from ſeeds, make very little progreſs for three or four years; and as they may readily be increaſed by layers, which will ſave much time, and make equally good plants, (ſince, in that way, they root abundantly, and grow with great eaſe and freedom) I would adviſe the practice of it as the beſt method to have plantations of theſe trees ſpeedily.

THEREFORE, having provided yourſelf with ſtools, or mother-plants, after the ſame manner as directed for the Engliſh Elm, and planted at the ſame diſtances, with which, till now, the culture of the Lime will exactly agree, lay down their branches any time from September till April; only obſerve, that the plants laid down in autumn, will be better rooted, and have ſtronger ſhoots than thoſe done in the ſpring.

A QUARTER of generous freſh ground having been well prepared, about the middle of October take up your layers carefully, without tearing or bruiſing their fibres; ſhorten their

roots moderately, and cut away ſuch as croſs each other: If the layer is plentifully rooted, and thick-bodied in proportion to its height, ſo as not be ſhaken or diſplaced by the winds, it may be planted at full length; but ſuch as are tall and ſlender, (which, even laid by the beſt hands, will be the greateſt part) muſt be cut over, from ſix inches to a foot high, more or leſs in proportion to the quantity of their roots; plant them (theſe at full length ſeparate from the others) in lines, three feet aſunder, and fifteen inches diſtant in the line, giving the ground the uſual culture of hoeing and digging as for other trees; and here let them remain three years.

From thence remove them, at the ſame ſeaſon as formerly, to another quarter of ſtout ground, dreſſing their roots, and pruning their bodies, as directed for the Engliſh Elm, and plant them in lines, five feet aſunder, and two feet in the line; repeat the proper pruning in February every ſeaſon, as alſo ſpring and autumn digging; and, in this ſituation, they may continue four years.

Remove them again to another nurſery, ſtill in good deep ground, and plant them in lines, ſeven feet aſunder, and three feet in the line, annually giving them the neceſſary pruning, and digging the ground between them; where they may remain four years, and no longer.

By this time the trees, being eleven years old, will, if the ſoil has been middling, and the culture directed given them, be generally above twenty feet high; but as a ſucceſſion of the good kinds of large trees, that move with ſafety, will always be uſeful

to a man of fortune poſſeſſed of land, as alſo to a nurſeryman for gain, I would adviſe, ſtill to remove a number of theſe into another nurſery, planting them at ten feet aſunder, croping the ground with ſuch kitchen herbs as are beſt ſuited to the ſoil, which will pay both rent and labour, and letting them remain five or ſix years; by which time they will be from thirty to thirty-five feet high, and will ſucceed at, and after removal, as well as the ſmalleſt plant, by giving them three or four plentiful waterings in dry weather, the firſt, and, in caſe of a long continued drought, the ſecond ſeaſon.

THE Lime moſt affects a rich-feeding loamy ſoil, but will grow freely in any tolerable land, of a competent depth, though coarſe and heavy; they will alſo grow in ſandy and gravelly land, but not with the ſame beauty or advantage, as, in ſuch ſituations, their leaves, in dry ſeaſons, are often infeſted with inſects, and decay early in the autumn; therefore, in thin hungry ſoil, they ought not to be planted in quantities, though a few of them may be agreeable, even there, for variety.

THE timber of the Lime tree, is much preferable to that of any kind of the Willow, being ſtronger, and yet lighter; it is uſed by the carver, by architects for framing the models of their buildings, and by the turner for making bowls, diſhes, *&c.* I am likewiſe aſſured, it is very proper for lining of rooms, and that, when painted, it will laſt long.

THIS graceful and magnificent tree, the greateſt ornament of the Britiſh gardens and villas, and pride of planters in the laſt, and great part of the preſent century, is now in leſs eſteem than

formerly, though for what good reaſon I cannot eaſily account, as it has more good properties, the value of the wood only excepted, and that too far from being uſeleſs, than moſt trees I know. It produces a large, tall, upright body, ſmooth ſhining bark, ample leaf, goodly and extenſive ſhade, healthful odoriferous bloſſoms, is admirable food for bees, reſiſts the winds, bears lopping off large branches without injury, ſoon heals of its ſcars and wounds, continues ſound to a great age, and, of all the trees yet known, the Engliſh Elm excepted, makes the fineſt, loftieſt, and quickeſt paliſade hedges.

I SAY then, from what cauſes this tree has fallen into diſeſteem, is to me ſurpriſing. It were preſumptuous and inſolent in me, to arraign the taſte and judgment of the numerous, learned, and reſpectable body of planters in Great Britain; nor am I either weak or vain enough to make ſuch an attempt, but I cannot help doing what I think juſtice to this plant. I have argued with many of them, in defence of its beauty and utility in various reſpects; the beauty of the tree I have never heard diſputed, nor ever found the arguments againſt it go further, than the defect of ſhading its leaves early in autumn; but this is only materially ſo, when they are planted in poor, thin, or hot ſoil, which they diſlike, and which, being frequently practiſed, I preſume is the principal reaſon for their being diſcredited; but as the faſhions change, and many beautiful plants, as well as other things, have been out and in during my time, ſo I hope to live and ſee the Lime again reſume its former rank and character.

CHAPTER VIII.

THE HORNBEAM TREE.

The SPECIES *are:*

1. The common HORNBEAM.
2. The Hop HORNBEAM.
3. The Virginian Flowering HORNBEAM.
4. The ſtrip'd HORNBEAM.

THE common Hornbeam ſhould be propagated by ſeeds, which being ripe in autumn, after ſpreading them in a loft till dry, ought to be mixed with ſand till the following ſpring, when they may be ſown thin on beds of freſh earth, three and a half feet broad, with alleys eighteen inches wide between the beds, and covered three quarters of an inch deep. Theſe ſeeds will remain a year in the ground before the plants appear; during which time, the earth muſt be kept clean and mellow. In February next, looſen the ſurface of the beds with a ſhort-teeth'd rake, ſo as not to diſturb the ſeeds, and throw a gentle covering of freſh mould over them; where they may remain for two years, if not too thick, as the plants make ſlow progreſs the firſt ſeaſon, and are naturally well-rooted.

FROM the ſeed-bed remove them early in October, or as ſoon after as the weather will admit, into any freſh ſpot of ground

in the nurſery you can beſt ſpare, tho' of an indifferent quality; reduce the ſuperfluous roots, cutting away ſuch as croſs one another, and plant them in rows, two feet and a half aſunder, and a foot diſtance in the row; to remain three years, digging the ground between the rows annually.

By this time the plants will be fit enough for hedges, where immediate ſhelter is not required, or for woods, to be mixed with other young trees; but where you intend at once to have the advantages of warmth and ornament, a little more labour is required.

Therefore, where you deſire to have Hornbeam hedges planted at ſeven or eight feet high, remove them from the former nurſery to another, and place them in rows, ten feet aſunder row from row, and five feet diſtance in the row, training them annually in the regular hedge form, but always obſerving to keep them light and thin in the top, when, after four years ſtanding, they may be raiſed and planted out compleat hedges where deſigned to remain, and when they will have ſuch abundance of roots as to defy the ſtrongeſt winds, and require no further expence or trouble than two or three plentiful waterings, and keeping their roots clean for three or four years.

The ſtraighteſt plants intended for trees, may, at raiſing them from the firſt nurſery, be ſeparated from thoſe for hedges, and planted in rows, five feet aſunder, and two feet diſtance in the row; let them be annually pruned to their proper form, and from hence they may be removed to the places where they are meant to remain, after three or four years ſtanding.

THE ſecond and third ſorts are eaſily increaſed by layers, and make an agreeable variety with other trees in the wilderneſs.

THE ſtrip'd kind is propagated by budding it on the common, but the colours are not ſtrong or lively.

THOUGH I am no advocate for the Hornbeam tree in ornamental plantations, or in generous ſoils and ſheltered ſituations, yet its being one of the hardieſt trees known, the many good qualities of the wood, and the ſudden ſhelter and warmth hedges of it afford, appear to give it ſome claim to our attention, particularly in the cold expoſed parts of the country.

IT will grow ſurpriſingly in the coldeſt hills, and in the ſtiffeſt, barren, and otherways worthleſs ground; nor do I know any uſeful timber-tree, that maintains itſelf ſo ſtoutly againſt the winds; ſo that, being of quick growth, and clad in its numerous leaves all winter, it is certainly one of the fitteſt plants to nurſe and rear up other valuable or delicate trees.

THE wood is white, tough, and flexible, is uſeful for many articles to the turner, for mill-cogs, (in which it excels the Yew itſelf), ſtocks, and handles of tools, with many inſtruments of huſbandry; it is laſting fire-wood, and burns as clear as a candle.

THIS likeways, of all trees yet known, beſt preſerves itſelf from the bruttings of deer; ſo that clumps of them in deer-parks would be no ſmall improvement, both in point of beauty, and for ſhelter to theſe animals.

CHAPTER IX.

THE WALNUT TREE.

The SPECIES *are:*

1. The common WALNUT.
2. The large French WALNUT.
3. The thin-ſhell'd WALNUT.
4. The double WALNUT.
5. The late-ripe WALNUT.
6. The hard-ſhell'd WALNUT.
7. The Virginian black WALNUT.
8. The Virginian black WALNUT, with a long furrow'd fruit.
9. The Hickory, or white Virginian WALNUT.
10. The ſmall Hickory, or white Virginian WALNUT.

MR MILLER, in the Gardener's Dictionary, ſeems to be of opinion, that the firſt-mentioned ſix kinds are only ſeminal variations, and not diſtinct ſpecies, as in moſt other ſorts of fruit-trees; and ſays, the trees raiſed from theſe different ſeeds, rarely produce the ſame kinds of fruit again. This is a point I have not lived long enough to determine; for tho' I have planted the ſeeds of all the ſpecies of Walnuts (or names given them for ſuch) I could procure, marking theſe ſpecies or names diſtinctly, I have yet reap'd very little fruit from them; but one circumſtance I am

well aſſured of, is, that the fruit of the ſecond and third ſorts, commonly paſſing under the names here given them, and of which I have ſeen and eat many, are ſeemingly very different, and much finer fruit than the others: Therefore, to make ſure of the beſt, at leaſt for a gentleman's private uſe, I adviſe that theſe two ſorts be inarched on the common Walnut, in which they will ſucceed and produce fruit in one third part of the time they would do from ſeeds, tho' the tree will not be either ſo large or ſo laſting.

Of all trees the Walnut is one of the moſt difficult to reduce to any regular uniform appearance; it naturally grows in a ragged diſorderly manner, and pruning it being deſtructive, it deſpiſes the art and induſtry of the gardener: With reſpect then to its form and growth, we will leave it to nature, and only endeavour to point out ſome aids that will much aſſiſt her in the early and plentiful production of good fruit, and which unaſſiſted nature will be many years in effecting.

Inarching the particular kinds you chuſe, has already been mentioned; but to make extenſive plantations for fruit, than which few improvements would in time give greater returns of gain, proceed as follows:

Having procured a parcel of the largeſt and beſt-ripen'd nuts, of the ſecond and third ſorts, from France, provide alſo a parcel of thin flat ſtones, tyle-ſherds, or ſlates, from a foot to eighteen inches broad; lay them cloſe together in lines, the length of the quarter in the nurſery intended to be planted with the nuts; bury them in the ground about eight inches deep, and plant your

Walnuts ſix inches aſunder, and two inches deep, along the middle part of theſe materials; the tender roots thus meeting with oppoſition, and unable to penetrate further, will ſpread themſelves on the ſurface of the ſtones, *&c.* but not having ſo much nouriſhment or moiſture in dry weather as in the open ground, or as may be neceſſary to make them grow freely, they will require frequent but gentle waterings, both the firſt and ſecond ſummer, during which time they muſt remain.

HAVING ſtood here two ſeaſons, as early in the autumn as their leaves are decayed, and the ſhoots hardened, raiſe them carefully, and, without the ſmalleſt inciſion on root or branch, plant them again fourteen or ſixteen inches aſunder, on the ſame kind of bottom, or any other hard rubbiſh that will not invite the roots downward. Theſe materials muſt be ſunk three or four inches deeper, and ſix or eight inches broader than the former, to prevent the roots, having covered their bed, from running deep. At the end of two years, remove the earth from the roots of ſome of the plants; and if you find they have not near covered their bed, they may continue a third year; but if they have, and are tending downward, they muſt be removed: During all the time of their continuance here, they will require moderate waterings in dry weather.

REPEAT this practice once again, making their bedding about three feet broad, and the ſoil above fifteen or ſixteen inches deep; plant them at two feet aſunder, and, as before, without pruning roots or bodies, further than the ſmall branches near the root; and if theſe are rub'd off with your hand early in ſummer, while the ſhoots are tender, it will be preferable to the moſt ſkil-

ful pruning: In this place, if the ſoil is rich, let them remain three, or, if poor, four years.

By this time the trees will be in a proper condition for removal to where they are deſigned to remain for good, which, as they are chiefly intended for fruit, ought to be a dry ſound land, with a ſandy, gravelly, or chalky bottom, but by no means in a deep heavy mould, where the roots would ſtill tend downward, imbibe the crudities of an ingrateful ſoil, and get below the influences of the ſun and rains, which would not only affect the flavour of the fruit, but keep the trees much longer from becoming fruitful.

If they are planted by way of orchard, from thirty to thirty-five feet will be a reaſonable diſtance; but why may we not plant them as they do in Burgundy, in their fields of wheat and other grain, at ſixty or ſeventy feet diſtance, which is ſo far from hurting the crop, that they look on them as a great preſerver of it, by keeping the ground warm in winter, neither do the roots hinder the plough? and if the Burgundians find their ſhelter uſeful with them, how infinitely more ſo muſt it be in this cold iſland of ours? But the advantages accruing from the general culture of this tree in France, are not peculiar to that country alone; for over great part of Germany, they find their gain from it ſo great, that in many places a law lately ſubſiſted, and I believe does to this day, by which no young farmer is permitted to marry a wife, till he bring proof that he has planted, and is the father of a certain number of Walnut trees. The fruit will ripen perfectly well in all the cultivated parts of Great Britain; and the method of managing the trees, as here directed, being

attended to, will make it higher flavoured, ripen it earlier in the ſeaſon, and bear a plentiful crop twenty years ſooner than it would otherways do cultivated in the uſual way. The beſt manure for fruit-bearing Walnut trees, is, ſtrewing over the ſurface of the ground with aſhes the beginning of winter, the land having been plow'd, or otherways laboured, before that time.

How much would ſuch plantations improve the beauty and wealth of this nation? and how greatly is it to be lamented, that men of fortune ſo ſeldom undertake ſuch noble public works, for a bleſſing to the poor, the general good of the country, as well as their own private intereſt? as, by the common culture of this tree for fruit, large ſums of money, annually ſent abroad, would be ſaved in a few years, and that too at an inconſiderable expence.

Thus having directed the beſt practice I know, for ſuddenly procuring plentiful crops of Walnuts, it remains to conſider the moſt proper manner for cultivating the tree for timber.

The Virginian kinds for this purpoſe, but particularly the ſeventh and eighth ſorts, are much preferable to the others; they grow faſter, and become larger and loftier trees, and the wood is alſo ſaid to be of a ſuperior quality.

The Walnut tree is more impatient of tranſplanting than moſt others; the top-roots, being of a pithy hollow texture, do not agree with cutting; which, if it does not deſtroy them altogether, weakens them ſo much, that they make little advance for ſeveral years, and indeed never become vigorous or comely trees.

THEREFORE, to have a plantation of them for timber, procure a parcel of their nuts, of the ſeventh and eighth ſorts, from Virginia, which may eaſily be had at a trifling expence; and having prepared your ground, by a good deep plowing, digging, or, beſt of all, trenching, the autumn before, in February plant your nuts in drills drawn out with the hoe, and cover them between two and three inches deep; let the drills be five feet aſunder, and the nuts planted about eighteen inches diſtant in the drill; and as many of them are to remain, to fill the land properly with timber-trees, let the ground be kept clean, by hoeing in ſummer, and mellowed by digging before winter, for two years; after which, you muſt carefully raiſe every ſecond plant in the lines, without in the leaſt diſturbing what remains, which will leave them at a ſuitable diſtance for ſtanding four or five years longer. After the firſt two years, the ground between the trees may be employed in crops of Turnip, Carrot, Beans, Cabbages, and various other kitchen herbs; which, if properly kept in order, will, from the culture the land receives, improve the growth, rather than injure the trees. From time to time, as they advance in ſtature, the leaſt promiſing of them muſt be taken away, by cutting them below ground, to prevent hurting the roots of what remains; and this muſt be repeated, tho' not till their branches are near touching one another, as the ſtanding moderately thick will promote their upright growth, till they are left at the diſtance of about thirty feet.

IF you incline to ſave the plants that were raiſed at two years old, take them up with the greateſt care, without wounding the ſmalleſt part of their roots, or bruiſing their fibres, and immediately plant them out at full length, the ſame diſtances you did

the nuts, treating them afterwards in all reſpects after the ſame manner as directed for them.

THO' it has been obſerved, that pruning in general is hurtful to this tree, the branches as well as roots being of a ſpungy hollow nature, yet, when it has been omitted to pinch off the young tender ſhoots, ſome degree of it will become neceſſary, where branches that croſs each other, would deſtroy themſelves, and injure the whole tree; let ſuch then be cut off ſmooth, and cloſe to the body, about the middle of September, that the wound may heal, and be covered before the winter rains; and that as little of this may be practiſed as poſſible, let the plantation be annually examined, and all the young croſs-growing branches taken away, to prevent the neceſſity of lopping old ones, which is doubly hurtful.

THE ſoil for the Walnut intended for wood, need neither be ſo warm, or generous, as that for fruit. Indeed, where large growth is the only motive, the whole ſpecies delight moſt in a deep, ſound, rich-feeding land, on which, if it incline to marle in the bottom, they will grow amazingly; but, notwithſtanding, they will ſucceed, and make goodly trees, in any ordinary ſoil that has a competent depth of mould, tho' coarſe and ſtoney: I have likewiſe ſeen many ſtately trees of them on clay.

THE value of the wood, for chairs, bed-ſteads, tables, wainſcoting of rooms, cabinets, gun-ſtocks, *&c.* is univerſally known.

CHAPTER X.

THE CHESNUT TREE.

The SPECIES *are:*

1. The common or Spaniſh CHESNUT.
2. The ſtrip'd CHESNUT.
3. The Chinquapin, or dwarf Virginian CHESNUT.

THIS much neglected, tho' graceful and magnificent tree, by attending to its proper culture, for fruit, timber, and copſe-wood, might, in a few years, become among the greateſt advantages this country can reap by planting: I ſhall therefore be particular in directing the beſt methods I know, of propagating them for theſe different purpoſes.

To raiſe them for fruit, procure a parcel of the nuts from Portugal or Spain; pick out the largeſt, plumpeſt, and browneſt of them; the goodneſs of the ſeed is known by its weight, to try which, throw them into a tub of water; reject ſuch as ſwim, but thoſe that ſink you may be ſure are good; preſerve them in dry land till the beginning of March, when, having prepared a ſpot of looſe mellow ground, ſow them in drills made with the hoe, three inches deep, the drills about fourteen inches aſunder, and the nuts ſix inches in the drill, where, as they ſhoot freely, I would adviſe that they only remain one year.

IN February, or early in March following, which, from repeated experience, I prefer to the autumnal planting of theſe

trees, remove them to another quarter; ſhorten their top-roots with a ſharp knife, ſmooth and clean, ſparing their ſpreading fibres, and keeping them as ſhort time as poſſible out of the ground, to keep theſe fibres freſh, and prevent their moulding; plant them in lines, two and a half feet aſunder, and one foot diſtance in the line, keeping them clean in ſummer, and pointing over the ground between the lines ſpring and autumn, when any croſs ill-placed branches may be pruned off; and in this ſituation let them remain two years.

Remove them carefully, by taking up their whole fibres, to another freſh quarter of the nurſery, ſtill obſerving to ſhorten their top-roots, to cut off ſuch as croſs each other, and ſmooth the ends of the ſpreading ones, which will now be ſtronger and more numerous; at the ſame time, prune away any ill-placed branches from their bodies and tops; which being done, plant them in lines four feet aſunder and two feet diſtance in the line, where, managing them in other reſpects as directed for the former nurſery, let them continue three years.

By this time theſe trees will be of a proper age and ſize, either for ornamental plantations in avenues, clumps in parks, the wilderneſs, or in the orchard way for fruit; but it may be neceſſary here to obſerve, that the ſhade of the Cheſnut, like that of the Aſh, is obnoxious to other plants, and that they ſhould therefore be placed in thickets, or other detached plantations, by themſelves.

The ground intended for a conſiderable plantation of fruit-bearing Cheſnut trees, ſhould have three or four plowings the preceding ſummer and winter; and if one good digging is added a little before planting, it will be a great improvement to

the ſoil, as I hold the labour of the ſpade to be of all others the beſt. This being done, your trees carefully raiſed, their roots and bodies properly pruned, plant them in ſtraight rows, ſix feet diſtant every way; let the ground be annually dug, to encourage the ſpreading of their roots, and, at this diſtance, they may remain till the branches begin to approach each other, when you muſt take up, by the roots, every ſecond row entirely, and every ſecond plant in the row remaining, which will leave them at twelve feet diſtance; and the wood of the trees taken up, will be highly uſeful for many purpoſes of gardening and farming. Having dug or half-trenched the land, (for deep trenching would increaſe the growth, but retard the fertility), it may, for ſome years, if of a good quality, be profitably employed in Potatoes, Cabbages, Turnips, and many other crops, which, by digging in the leaves of the Cheſnuts, when rotted, (the beſt of all manure for them), will, inſtead of exhauſting, annually invigorate the ſoil, and improve the plantations both for fruit and timber. Theſe trees having ſtood till their branches begin to meet as formerly, muſt again be reduced in the ſame proportion the others were, which will leave them at twenty-four feet diſtance every way, and at which diſtance they may remain for good. The wood of this laſt felling will ſaw into ſmall boards, and, being now about twenty years old, muſt be rooted out entirely, to prevent impoveriſing the land, and robbing the trees of their proper nouriſhment, which, as the Cheſnut ſhoots vigorouſly after cutting over, muſt neceſſarily be the caſe. The timber of theſe taken up, being of ſize for ſeveral uſeful purpoſes, will bring a conſiderable price from the joiner, cabinet-maker, *&c.* and the remaining trees, which already have produced fruit for ſeveral years, will henceforward bear vaſt quantities, and make great returns of profit to the owner.

THUS having directed ſuch a culture for the Cheſnut, as, judiciouſly practiſed, will aſſuredly produce abundant crops of large well-flavoured fruit, much ſooner than the tree abandoned to nature would have done, I ſhall proceed to thoſe intended for timber and copſe-wood, the propagation of which will be attended with little trouble or expence.

LET the field intended for this plantation, which requires not being either warm or rich, be fallowed the preceding ſummer, and get two or three good deep plowings in winter, to ſweeten and pulveriſe the ſoil, and to deſtroy all root-weeds. Having procured and tried your ſeeds, as formerly mentioned for the fruit-bearing trees, make drills acroſs the ground with a hoe, four feet diſtance, and put in your nuts, with the point or eye upwards, at fourteen or ſixteen inches aſunder, filling up the drills, and raking the ſurface ſmooth; and for this, and the following year, you may take a line of Beans between the drills, which, having their tops cut off, and being kept clean, will be a protection to the young plants, and encourage their growth. At the end of two years, early in the ſpring as has been ſaid, remove every ſecond plant in the rows, which will leave them about two feet and a half aſunder, and at this diſtance let them remain three years. With the plants taken up as above, I mean the two years old, you may make any plantation required.

AT the end of the three years, remove by the roots, ſo as not to hurt the plants that are to continue, every ſecond row of trees, and every ſecond tree in the remaining row, which will leave them at the diſtance of eight feet by five. The plants now raiſed will have carroty roots, and few fibres; ſo are not worth planting again, but will be uſeful for ſtakes and poles.

Leſt, by rooting out the unneceſſary trees, any of thoſe that are to remain ſhould be looſened, or their roots hurt, let the holes be filled up immediately, the ground well dug, any kitchen-crop taken, and the trees remain untouched another year; when, in February, cut them over, reſerving only one of the ſtraighteſt and moſt vigorous, at the diſtance of twenty-five to thirty feet: You may ſtill continue to work the ground, and take dwarf-crops between the rows for two years more; after which, they will ſoon cover it, and muſt be left to nature. One will readily obſerve, that when any of the ſeeds have failed at the due diſtances here preſcribed, theſe defects are to be ſupplied by the beſt plants, taken up at two years old.

Thus you have a plantation, the copſe-wood of which only will, in ſeven years more, that is, fifteen years from the ſeed, produce more than double the rent and labour, and, every ſeven or eight years, will conſiderably increaſe for forty or fifty to come, when you have a foreſt of noble timber-trees, that of themſelves will be worth more than the value of the land at the higheſt purchaſe-price. The timber-trees here will likewiſe produce fruit, but neither in ſuch abundance, or of ſo good a quality, as thoſe that have been tranſplanted ſtanding at due diſtances, and where the ground has been properly cultivated; for tranſplanting promotes fructification, as, from the roots ſpreading near the ſurface, the juices are better prepared and digeſted by the ſun and air, and, of courſe, their fruits better matured, and higher flavoured, than thoſe can be whoſe roots run deep into the cold, ſluggiſh, and unprepared earth, from whence they muſt neceſſarily imbibe great quantities of crude

and unwholeſome juices, which will naturally be communicated to the fruit.

THE ſtrip'd Cheſnut is amongſt the moſt beautiful of all the variegated trees, and, when mixed with other ſtrip'd plants, has a moſt agreeable and chearful effect, the blotches being of a rich ſhining gold colour, ſtrongly mark'd. This is uſually propagated by budding, or inarching it on the plain ſort, though I have raiſed many of them by common grafting.

THE Chinquapin, or dwarf kind, abounds in the woods of America, where it produces abundance of nuts, which may eaſily be brought here with ſafety, by mixing them with dry ſand, and which all the nut kinds from far diſtant countries ought to be, though, by not adverting to this ſimple and eaſy preſervative, we generally looſe the greateſt part of them. It grows in its native ſoil to about fourteen or ſixteen feet high, and is hardy enough to bear our ſevereſt winters. This may be propagated by its ſeeds as the common Cheſnut, or, when theſe cannot be procured, by inarching on it, which will increaſe its magnitude.

THE fruit of the Cheſnut tree is not only uſed for many elegant diſhes in France and Italy, but is found ſtrong and healthful food for labouring people, either made into bread, or prepared as they do in various ways abroad: For all which purpoſes, we might in a few years have abundance of them, as well as for feeding our hogs, which would highly improve both the taſte and quality of our bacon, and render it as good as from Virginia, or any other country we know: It would alſo much reduce its price, and bring it within the reach of labouring men.

THE leaves of this tree make excellent litter for cattle, which, when mixed with their dung, (particularly that of cows well rotted), is an admirable manure for many kinds of flowers, green-houſe, hot-houſe, and other delicate plants.

THE beſt ground for fruit-bearing Cheſnuts, is a looſe moiſt (though not wet) gravel or ſand: They will likewiſe ſucceed in any ordinary mixt ſoil, which, if it abound with ſmall round ſtones, ſhould not be taken away, as, from their warmth, they will cheriſh and forward the ripening of the fruit.

FOR plantations of timber-trees, and copſe-wood, you can hardly go amiſs, ſo there be depth of ſoil, and no ſtanding water; they will grow on obſtinate clay, and the bleakeſt declivities of hills, this tree, where fruit is not aimed at, being more patient of cold than heat.

THE wood is uſeful for many eſſential purpoſes: It makes good tables, chairs, and bed-ſteads; is the moſt laſting poles of any put in the ground with the rind on, for eſpaliers, paliſade hedges, dead fences, vine and hop yards, and for pipes to convey water under ground: It will laſt longer than Elm, or even Oak itſelf. In Italy, the beſt caſks for wine and other liquors are made of this wood, which has the ſingular property, when thoroughly ſeaſoned, of maintaining its bulk, without ſhrinking or ſwelling, which moſt other timber does; and formerly was built of it, great part of the antient city of London, near which were large foreſts of Cheſnut trees, which, whether or not a native of this iſland, is not well determined.

CHAPTER XI.

THE HORSE-CHESNUT TREE.

The SPECIES *are:*

1. The common HORSE-CHESNUT.
2. The yellow blotched HORSE-CHESNUT.
3. The white blotched HORSE-CHESNUT.
4. The ſcarlet flowering HORSE-CHESNUT.

THE firſt mentioned ſort, though a native of Conſtantinople, defies the greateſt ſeverity of our winters, and ſoon becomes a large tree. The nuts of it may be ſown as directed for the Sweet Cheſnut, and, like it, ſhould only remain one year in the ſeed-bed.

IN February, or early in March following, having reduced their top-roots, plant them in lines, three feet aſunder, and at fifteen inches diſtance in the line, where let them remain three years.

To make them a proper ſize for avenues, or clumps in parks, and lawns, remove them to another quarter; dreſs the roots properly, and prune ſome of the under branches, with any others that are croſs, too thick, or ill-placed; but beware of the large bud at the extremity of the leading branch, in which is incloſed

the ſhoot in embryo for the ſucceeding ſeaſon: Plant them in lines, ſix feet aſunder, and two and a half feet in the line. In this ſituation they may continue three, but not above four years, when, in an ordinary ſoil, the plants will be from twelve to fourteen or fifteen feet high.

THE ſecond and third ſorts may be propagated by budding them on the common kind, on which they take freely.

THE ſcarlet-flowering Horſe-Cheſnut is a beautiful plant, and produces a very rich and elegant flower. It is a native of America, but is hardy enough to bear our climate, in ordinary ſituations, when four or five years old, though it is ſomewhat more delicate than the common in infancy: Therefore, having procured their nuts, (which you may eaſily do from South Carolina, where they grow abundantly) ſow them as directed for the common kind, but in a warm ſheltered ſituation, and in a rich looſe ſweet mould; and remove them the ſucceeding ſpring to a ſituation and ſoil of the ſame quality, where they may remain three years, when they will have acquired ſtrength enough to put up with common uſage. This tree, in America, grows to the height of thirty feet, but I have not ſeen any in Britain of near that ſize, and I doubt it will never arrive at that ſtature with us; notwithſtanding which, it is well worth our cultivation, and has a fine effect in the wilderneſs, planted with trees of the ſame growth.

THIS may alſo be budded or inarched on the common kind; but they will neither make ſo handſome plants, nor ever grow to near the ſize of thoſe raiſed from ſeeds.

THE Horſe-Cheſnut is a tree of ſingular beauty when in bloom; and the common ſort of it, which will ſucceed in almoſt all ſoils, (tho' beſt in that which is deep) is proper enough to intermix in ornamental plantations, in a ſheltered country; but in bleak and expoſed ſituations, it is idle to plant them, as, from the wood being very brittle, every impetuous wind will break and disfigure more or leſs of them.

THE fruit is ſo extremely bitter, that even hogs will not eat it, though the Turks mix it with other food for their horſes that have coughs, or are broken-winded, for which it is ſaid to be an excellent remedy.

THE timber, except for fuel, anſwers no valuable purpoſe I know, further than I have heard from a gentleman of much knowledge and obſervation on the qualities of wood, that it is very proper for pipes, to convey water under ground, and, in that ſituation, will laſt longer than many harder woods.

CHAPTER XII.

THE *LARIX*, OR LARCH TREE.

THE Larch tree is propagated from ſeeds; but the proper way to procure theſe ſeeds good, is not generally known, at leaſt I am certain it is very rarely attended to. The common method is, to gather their cones in the autumn; and having half-roaſted them in a kiln, a ſtove, or on a hearth before the fire, then ſplitting the cones, and picking out the ſeeds with a knife or other ſharp inſtrument, they with difficulty get part of them, though, by this practice, many of the plumpeſt and beſt ripened ſeeds are bruiſed. I proceeded in this way myſelf for ſeveral years, without ſucceſs ſuitable to the labour and expence. I ſowed the ſeeds, with attention, in different ſoils and ſituations, and repeated a variety of experiments, but ſtill had thin crops in proportion to the quantity of ſeeds, till at laſt I diſcovered my error: I ſhall therefore, from experience, direct a method, by obſerving which, theſe ſeeds may be procured as good, and the plants be raiſed in the ſame abundance, and with the ſame eaſe, as the common kinds of Fir and Pine.

I FOUND, that tho' the cones of the Larch tree are at their full ſize in autumn, the greateſt part of the ſeeds they contain are not then arrived near their maturity, and that they ripen hanging on the trees during even the coldeſt winter months. Theſe ſeeds are incloſed in ſo hard and thick a covering, that the ſevereſt ſeaſons

cannot affect them; therefore I deferred gathering the cones till the months of March or April, when they eaſily part with the tree, and many of them drop from it, which are ſtill better than thoſe plucked. The cones thus procured, fully ripe, ſhould be ſpread in a dry covered place, till the weather become warm, in May or June, when they ought to be expoſed on glaſs-caſes at the bottom of windows fronting the ſouth, or any other way moſt convenient, ſo as to receive the warmeſt influences of the ſun: This muſt be repeated (taking them into a warm place every evening before the dews fall) for ſeveral weeks, when the cones will open, and many of the beſt ſeeds come out, by ſhaking them in a wire ſieve; but as all of them will not, therefore ſplit the cones aſunder, by driving a ſmall piece of ſharp iron through the center, from the bottom to the top of them: Let theſe again expoſed to the ſun for a few days, when many more ſeeds will ſhake out, and all that is good of them ſeparate from the huſk, or be eaſily pick'd off with the point of a knife.

Tho' the ſeeds of theſe trees in the cone are good for four or five years, yet, when diveſted of that, they loſe their growing quality in a few months; therefore, as ſoon as they are got out, let them be mixed with fine dry ſand, and preſerved in bags till the ſeaſon of ſowing.

In the beginning of March, or as ſoon after as the weather will permit, having prepared a ſhady border, expoſed only to the morning ſun, of looſe, mellow, rich ground, ſow your ſeeds very thin in beds three and a half feet broad, with alleys of eighteen inches; clap the ſeeds gently into the bed with the back of a ſpade, ſo as, by making it ſmooth and level, it may receive an equal cover-

ing, and ſift over them not more than a quarter of an inch of fine compoſt earth, mixed with one-fourth part of ſea-ſand, or, failing that, the fineſt pit-ſand you can procure. If the weather is dry, and not froſty, in a fortnight after ſowing, give them gentle waterings in the evening of every fourth or fifth day, and in ſix weeks they will begin to appear above ground. As theſe plants come up with the ſeeds on their top, which the birds are very fond of, care muſt be taken to guard them from thoſe enemies, who will otherways deſtroy all or moſt of them, but which may eaſily be prevented, by driving a few fork'd ſtakes round the beds, and throwing a net or other thin covering over them. The plants being fairly above ground, muſt now be refreſhed with a little water every ſecond or third night, for three weeks, when it does not rain: But this muſt be given with care, and as lightly as poſſible, with a watering-pot that has ſmall holes in the roſe of it; for theſe plants, tho' afterwards amongſt the hardieſt trees, are, in their infant ſtate, very delicate; and heedleſsly daſhing on the water from a coarſe watering-pot, would deſtroy great numbers of them. The waterings, as directed after the ſeeds appear, muſt be continued, tho' only once in ten or twelve days, increaſing the quantity when the weather is hotter than uſual, till the end of Auguſt.

The weeds, at their firſt appearance, muſt be carefully pick'd out, as otherways, in a few days, it will be impoſſible to do it without bringing many of the plants alongſt with them.

It may probably be objected, by ſuch as make no diſtinction in the quality of plants, that I have directed unneceſſary trouble and expence in the culture of this hardy tree, which is now

raiſed in ſuch abundance with leſs ceremony: To which I ſhall only anſwer, that, in point of expence, this method is much the cheapeſt, as one pound of ſeed will produce more than ten pounds in the common waſteful way it is treated; and, what is yet of much higher importance, one thouſand plants, thus cultivated, are of more real value than ten thouſand, ſuch as are uſually procured from ignorant nurſerymen.

The end of March, or beginning of April following, theſe plants may be removed from the ſeed-bed to the nurſery; and their roots being ſhortened, laid in rows, about fifteen inches diſtant, and ſix or ſeven inches aſunder in the row, watering them at planting, which may be continued once a week, in dry weather, for five or ſix weeks, when they will be paſt danger; and here they ought only to continue one ſeaſon.

At the ſame time the ſucceeding year, remove them to another nurſery, but now be ſparing of their roots, taking away only ſuch as croſs each other, with ſome of the ſtraggling hairy fibres, and ſmoothing the extremity of the long ones; plant them in rows, at three feet diſtance, and fifteen or ſixteen inches in the row; water them when planted, keep them clear of weeds during the ſummer, dig the ground between the rows in autumn and ſpring, and, in this ſituation, let them remain two years.

By this time, in an ordinary ſoil, the trees will be from five to ſix feet high, and of a proper ſize to tranſplant in large quantities, and, in expoſed ſituations, on meagre hungry ground; but where beauty and ſhelter are immediately required in plantations near the houſe, proviſion ought to be made of larger plants:

Therefore, for this, or ſimilar purpoſes, let ſuch a quantity of theſe trees as may probably be wanted, be removed to another nurſery, and planted at the diſtance of eight feet by ſix, ſtill being ſparing of the roots, which do not, like many other Foreſt-trees, admit of being much reduced or wounded; particularly, when large, let them be plentifully watered at removal, dig the ground about them as formerly mentioned, and here let them remain three years.

THESE trees will now be from ten to twelve feet high, and of a very proper ſize to remove for ornament, ſhade, and ſhelter, where meant to remain for good, which may be accompliſhed without any great labour or expence. The plants, thus far advanced, ſhould be removed earlier in the ſpring than has been directed for the youger ones, which, in ordinary temperate ſeaſons, may be beſt performed about the end of February, or early in March. At this time raiſe them carefully, without injuring any of the principal roots, and only ſmooth the extremities of the ſmall ones with a ſharp knife, letting as much of the earth as poſſible adhere to them; pour in a large watering pot-ful of water into the pit before the tree is placed in it, another after the roots are half covered, and a third after all the earth is properly gathered about it. If the ſeaſon is moiſt, theſe plants will require no farther trouble; but in caſe of long-continued hot and dry weather, they ought to be watered once a fortnight in thin dry ſoil, or every third week where it is deep and ſound, and this repeated two, three, or four times, more or leſs as the weather requires it; but, in giving them water, do not pour it cloſe on the trunk of the tree, but make a drill round it with the hoe, about a foot from it, into which pour the water gently, and draw the earth again over it when the water has ſoked in.

MOST of the Larch trees we ſee, thoſe excepted that are ſheltered by higher plantations, decline much from the ſouth-weſt winds; the great cauſe of which is, not conſulting their genius, but unſkilfully pruning them. This plant, eſtabliſhed in a ſoil it likes, (nor indeed is it nice in its choice) will make prodigious ſhoots; theſe ſhoots are extremely heavy and flexible when young, which being the caſe, when any number of the ſide-branches are cut away, the length of the leading ſhoot is increaſed, the body becomes ſlender, and the tree naturally bends with its own weight, and grows obliquely; nor in the Larch tree is this to be redreſſed by any art, as nothing but reducing the height in any tree can affect a cure, and which, tho' to many is an improvement, yet to this is certain deſtruction: I therefore, from experience, adviſe, that not a ſingle branch be taken from this tree, except ſuch as by accident may have been broken or bruiſed, till they are fifteen or ſixteen feet high; nor would I chuſe any pruning at all, were it not to clear the ſurface of the ground, ſo as to admit the rays of the ſun, to diſſipate noxious vapours: But as this may ſometimes be neceſſary, when they have arrived at the height mentioned, the loweſt tire of branches may then be cut off cloſe and ſmooth about the middle of October, the following year a ſecond tire, and the ſucceeding a third. This will be clearing the trunk to about four or five feet high, higher than which they ſhould never be pruned, to make them well proportioned ſtraight trees, capable of reſiſting the winds, which, with this culture, they effectually will; beſides, as they naturally grow in a regular pyramidal form, their greateſt beauty is loſt when diveſted of their branches.

THIS is a noble and valuable plant; the bright red bloſſoms it produces in the ſpring, are both beautiful and fragrant, and the

proper culture of it claims our particular attention, for many reaſons. It is a native of the Alpine and Pyrenean mountains, and loves an elevated ſituation: It will become a ſtately tree in the pooreſt hungry ſand and gravel, and on the higheſt and bleakeſt hills, where there is but a few inches of ſoil; in ſhort, it rejects no quality of earth that is dry, but in wet lands it will not ſucceed.

THE many encomiums beſtowed both by antient and modern authors on the virtues of this tree, and the great value of its timber, would take up many pages, and exceed the bounds allotted for this work: I ſhall therefore only enumerate a few of the beſt atteſted circumſtances, but which may be ſufficient to recommend it to all judicious planters and others, lovers of their country.

FROM the wounded bark of this tree, exudes the pureſt Venice turpentine; and on the body and branches, grows the Agaric, a drug uſed in medicine. The famous architect, Scamozie, built many of the moſt ſuperb palaces in Venice of it, and highly commends it; and Vitruvius laments that they had not enough of it in Rome for joiſts, and other parts that require both ſtrength and beauty in houſes, as well as from its property of long reſiſting fire. The Forum of Auguſtus was built of this material, as were ſundry magnificent bridges by Tiberius. Poſts of it driven into the ground become almoſt as hard as iron, and will bear an incredible weight. It bears the ſmootheſt poliſhing, and is ſo exceedingly tranſparent, that rooms wainſcotted with it, will make people at a diſtance, when candles are lighted, imagine the whole room on fire. Nor was it uſed for theſe

purpoſes only, but in building of ſhips alſo; and Witſen, a Dutch writer on naval architecture, mentions a ſhip, thirty feet in length, to have been found not long ſince in the Numidian ſea, twelve fathoms under water, chiefly built of this timber, and Cypreſs, both reduced to that hardneſs as to reſiſt the ſharpeſt tools; nor was any part periſhed, though it had lain fourteen hundred years ſubmerged. It makes the beſt palats for painters to ſeparate their colours on; and it was on boards of the Larch, that Raphael, and the moſt famous artiſts of that time, eternized their ſkill, before the uſe of canvas was introduced.

Is it not amazing, then, that thouſands who have it in their power, will not be at a moderate expence in planting a parcel of ſmall twigs of this plant, on barren heaths, or cold and rugged hills, which, in a few years, would not only adorn, and, by the warmth they would afford, really improve the adjacent country, but, in leſs than an age, inrich their families?

CHAPTER XIII.

THE VIRGINIAN TULIP TREE.

THIS tree is common in Virginia, and is to be found in moſt of the northern continent of America, from whence the cones are annually brought in abundance to Britain.

AUTHORS direct theſe ſeeds to be ſown in pots, and placed on a hot-bed; and when the plants are a year old, each to be planted in ſeparate ſmall pots, and again plunged into another hot-bed; after which, they are ſtill to be kept in pots, and under frames in winter, for three or four years longer, till they have acquired ſtrength. This method I followed in my early practice, and no doubt it will both raiſe and preſerve them alive for that time: But there is no occaſion for treating this tree with ſo much delicacy, even in infancy: I ſhall therefore direct an eaſier and cheaper way of cultivating it, founded on experience, which, in an ordinary ſoil, and ſheltered ſituation, will make much ſtronger and hardier plants, and by that means ſooner prepare them for removal to the places where they are meant to remain for good.

THE beginning of March, prepare a bed of good mellow rich earth, well mixt with old rotted cow-dung, expoſed to the ſun, and ſheltered from cold winds; place an old frame over the bed, and ſow your ſeeds, ſifting over them, about half an inch

thick, a ſoil compoſed ſome months at leaſt before, of one load of old paſture-earth, one of well-rotted cow-dung, and half a load of ſea or fine pit-ſand. Some of theſe ſeeds will probably make their appearance in nine or ten weeks, but much the greater part of them will lye in the ground till next ſpring; I would therefore adviſe giving the beds no more water than barely ſufficient to cheriſh the plants that have appeared, which, for four or five weeks after, ſhould be ſcreen'd from the ſun during the heat of the day, but which afterwards ſhould receive its full influence.

THESE circumſtances being obſerved, no further care is neceſſary this year, but clearing the ground of weeds as ſoon as they appear; and in winter, in violent laſting ſtorms, throw double mats over the frame, which muſt be regularly taken off on the weather's growing mild.

IN March, the ſucceeding year, carefully pick off with your fingers all moſſy, hard, and cruſted earth, from the bed; ſmooth it again, and ſift on a quantity proportioned to that taken away, of the ſame kind of mould as formerly; and about the end of April, or beginning of May, if your ſeeds have been good, the plants will appear in abundance, when they muſt be frequently but gently refreſhed with water, lightly given as directed for the Larch. From this time, till the beginning of Auguſt, they ought to be ſcreened from the mid-day ſun; but this I would not do by covering the bed with mats, as is commonly practiſed, which draws the plants, and renders them tender; but rather do it with part of an old reed fence, or, for want of that, and which indeed is ſtill better, nail ſome thin

boards together, the length of the frame, high enough to ſhade the ſurface of the bed from the meridian ſun. By thus ſhading the plants, and letting them enjoy all the open air, though they will not grow ſo tall, yet will they be thicker bodied, and more hardy. When this has been performed, no further care is neceſſary in this ſituation, but frequent moderate waterings in an evening, and throwing a mat over the frame during any ſevere winter-ſtorm.

About the beginning of April, next ſeaſon, (for this tree is late in expanding its leaves), prepare a ſpot of ground, in the ſame manner, and of the ſame quality with that directed for the ſeeds; raiſe the plants carefully with a trowel, without bruiſing their roots, which are ſoft and ſpungy; and if they cannot be immediately planted, mix a pale-ful of ſifted mould and water to the conſiſtence of pap, through which draw the plants one by one, till as much adhere as cover their roots and fibres. This will prevent their drying, and in this condition they may ſafely be tranſported to a conſiderable diſtance, and kept ſeveral days out of the ground. The roots of this tree do not admit of being much reduced; therefore, at this time, cut only a little of the top-root ſmoothly off, but let all the fibres remain, and then, ſtill in a ſheltered ſituation, plant them in drills cut out with the ſpade, at a foot diſtance line from line, and ſix inches in the line. Plant five of theſe lines, which will make a bed four feet wide; and if you have more beds than one, leave an alley three feet wide between them; let them be frequently (and more plentifully than formerly) watered in the evenings, during the ſummer months; after which, keeping them clear of weeds, throwing a mat over them, in caſe of very ſevere froſt, for the firſt

winter, and looſening the ground between the beds in ſpring, they will require no further attention in this plantation, where they ſhould remain only two years.

FROM theſe beds the plants may be removed to another nurſery of any good mellow deep ſoil: Be ſtill ſparing of their roots, and plant them in rows, three feet and a half diſtance, and eighteen inches aſunder in the row; keep the ground clean and mellow by labour, as has been directed, giving them plentiful waterings in dry weather, during the firſt ſummer, and let them continue here three years.

THE culture directed having been obſerved, theſe trees will now be hardy enough to defy the aſſaults of our ſevereſt winters, and, being about ſix or ſeven feet high, will be of a good ſize for planting where they are deſigned to remain. In a generous deep ſoil, interſperſed with other trees, but not crowded too near them, they will in a few years arrive at a great magnitude; but in thin and hungry land, they make ſmall progreſs, though they will flower ſooner.

IN America, they often grow on moiſt ſwampy ground; and in ſuch I have planted them here, but without ſucceſs, owing, I ſuppoſe, to our long wet winters rotting their tender roots and fibres.

THEY do not, like many other Foreſt-trees, admit of being planted to advantage at a great ſize, but they might undergo another remove more than has been here mentioned, to the height of ten or twelve feet, which I have done with great ſucceſs.

I know of no tree, that pruning either roots or branches has worſe effects on than this, which often kills, or otherways irrecoverably ſtunts them, as I have often found by ſad experience; therefore the plants ſhould be reduced to the form you deſire, in the nurſery, by rubbing off all ill-placed buds, or, with your finger and thumb, pinching away the improper branches ſoon after their appearance, while young and tender, more than which pruning they ought never to have.

THIS is a plant of extraordinary beauty and ſtatelineſs, and highly deſerves a place in all noble and elegant plantations. There is a tree of it in the gardens of the Earl of Peterborough, at Parſons-green, near London, which I ſaw in full bloom for ſeveral years ſucceſſively: It is above fifty feet high, and the trunk in proportion, and would have been much larger, but that having been planted in a wilderneſs quarter, it was long neglected, and injured by its branches being overhung, and the roots intangled with other trees, which prevented its receiving due nouriſhment. Mr Cateſby, in his Natural Hiſtory of Carolina, mentions trees of it in America, thirty feet circumference in the trunk, and the timber is highly valued by the Americans for its ſtrength and duration.

CHAPTER XIV.

THE ACACIA TREE.

The SPECIES *are:*

1. The common or Virginian ACACIA.
2. The American ACACIA, with triple thorns, commonly called the LOCUST TREE in the Weſt-Indies.
3. The Water ACACIA, from Carolina.

THERE are above thirty different ſpecies of this plant, that have been brought from Africa and America, but moſt of them are tender, and require the protection of the green-houſe or ſtove, and are foreign to a Treatiſe on Foreſt-trees for this climate; therefore I have only mentioned three kinds, which are hardy enough to bear our ſevereſt winters, and become large trees.

THE firſt ſort is propagated by ſowing its ſeeds the beginning of March, on a bed of well-prepared mellow ſoil, ſhaded from the mid-day ſun, which, in five or ſix weeks, will appear above ground, when they muſt be frequently watered in the evenings, during the hot and dry weather, and the weeds deſtroyed at their firſt appearance.

ABOUT the beginning of April the following ſpring, remove them from the ſeed-bed to the nurſery, be ſparing of their roots,

and plant them in lines, two feet diſtant, and a foot aſunder in the line, watering them at planting, and three or four times ſoon after if the weather is dry, when they will require no further trouble than keeping the ground clean, and digging it between the lines in the ſpring of the two following ſeaſons, being to remain here two years.

FROM this nurſery they may be tranſplanted to where they are meant to remain for good; but if deſired larger, they may undergo one other remove, and be planted in lines, three feet and a half diſtant, and eighteen inches in the line, treating them as formerly: But here they muſt continue only two years; for as theſe plants do not naturally produce ſpreading roots, and not agreeing either with theſe, or the branches being much cut, but rather that they ſhould grow in a ragged diſorderly manner, with heavy tops, they do not properly admit of being planted when large.

THE ſecond and third ſorts, though they will alſo riſe in the open ground, are yet ſomewhat ſhyer, and will appear ſooner, and make better ſhoots, being aſſiſted with a very moderate hot-bed, on which they may be ſown the middle of February. When the ſeeds appear, give them very gentle but frequent waterings, and let the frames be raiſed all the day-time, that the plants may have plenty of air; ſcreen them from the mid-day ſun till about the beginning of Auguſt, when the frames may be removed till the winter's froſt ſet in, and when they ſhould be again replaced, but the glaſſes always drawn off in mild weather.

THE ſucceeding ſpring, in the beginning of April, remove theſe plants, and treat them as has been directed for the Tulip-

tree; with this difference only, that if you chuſe to remove them twice, they ought only to remain two years after the ſecond tranſplantation.

All the kinds of Acacias are much improved in their form, by thruſting ſtraight ſtakes into the ground beſide them, to which the leading ſhoot ſhould be looſely tied with baſs.

The firſt-mentioned ſort of theſe trees was formerly much uſed in England for planting avenues, but for which purpoſe I know few plants more improper, as no art can reduce it to a uniform figure; and the branches of it are ſo hard and brittle, that numbers of them are broken every violent wind, from whence they have a ragged and diſagreeable appearance: All the kinds of them, therefore, ought to be planted in the wilderneſs, or under the protection of ſome other plantation, where, by growing in concert with other trees, they will eſcape that miſfortune, and where their negligent wildneſs of growth, and large bunches of ſweet-ſmelling aromatic flowers in ſummer, have a pleaſing effect, and intitle them to a place in all ornamental plantations.

They delight moſt in a deep feeding moiſt ſoil.

CHAPTER XV.

THE WILD CHERRY TREE;

In *England*, commonly called the BLACK CHERRY: In *Scotland*, the GEEN TREE.

The SPECIES *are*:

1. The common BLACK GEEN.
2. The common RED GEEN.
3. The large HUNGARIAN GEEN.
4. The GEEN TREE, with very ſmall ſtones, and large black fruit.

THOUGH this plant is not uſually claſſed in catalogues of Foreſt-trees, yet its ſtately ſize, fine form, beautiful and fragrant bloſſoms, the various uſes of the fruit, and value of the timber, certainly intitle it to our attention, and place it in no mean rank, either for ornamental or uſeful plantations.

IT is propagated from the ſtones of their fruit, which ſhould not be gathered till perfectly ripe, and beginning to decay, when they muſt be diveſted of the fleſhy part; and in four or five days after, when the humidity is gone, mix them in ſand, protected from moiſture, till the kernels are firm and dry, which will be in about a month; when, having prepared a ſpot of freſh mellow light ſoil, ſow them in beds of three and a half feet broad, with alleys of eighteen inches between them. If the following winter is ſevere, and the froſt ſtrong and laſting, during that period throw ſome Peaſe-haulm, or other light covering over them, to be regularly taken off on the weather's becoming mild.

In open winters no extraordinary protection is neceſſary; but after violent and long continued ſtorms, I have diſcovered many of the ſtones ſplit aſunder, and the kernels thus deprived of their covering, generally decay, particularly if the froſts happen early in winter. About the beginning of April, the plants will begin to appear above ground, when, in dry weather, frequently watering them in the evenings for about two months, will much increaſe their growth.

The following February, remove theſe plants from their ſeed-bed to the nurſery, in any tolerable ſoil not wet or ſtiff; and having reduced the top-roots, plant them in lines, two feet diſtant, and nine or ten inches aſunder in the line; give them two or three waterings in April and May, in dry weather; dig the ground between the lines in autumn and ſpring, and let them remain two ſeaſons.

From this remove them to another nurſery in October, ſtill reducing the top-roots, ſmoothing the extremities of the ſpreading ones, and cutting off ſuch as croſs each other, with a few of the undermoſt branches, or any others that are ill-placed; plant them in lines, four feet diſtant, and eighteen inches aſunder in the line; dig the ground as formerly, and let them ſtand here only two years longer, if intended ſoon to bear fruit; but, as foreſt-trees, without that conſideration, they may remain three years.

These trees will now be from eight to ten feet high, and of a proper ſize for planting in woods and wilderneſs work; but for groves, avenues, or clumps in lawns or parks, for which purpoſes few trees are more proper, they may again be removed, two or three repeated times, planting them at greater diſtances pro-

portioned to their ſize as has been directed for the Elm, till they are above danger from cattle, without protection, this tree being very patient of tranſplantation when large; only they ought not to continue above three years from each removal, for theſe purpoſes.

But with reſpect to thoſe principally intended for bearing fruit, a little more trouble is neceſſary; for though, by ſowing the largeſt, beſt ripened, and fineſt flavoured Cherries, ſome of the trees, in a favourable ſoil, will produce fruit as good as their original, yet this is by no means an invariable caſe; for moſt kinds of fruit-trees degenerate extremely raiſed that way, and though this does ſo in a leſs degree than many of the other ſorts, yet in ſome degree it will: Therefore, the only way of certainly procuring, and even improving the beſt kinds, is by grafting, or rather budding them, which is a preferable operation for all ſtone-fruit, on freſh healthful ſtocks raiſed from the fineſt fruits, of three or four years old, which, being eaſily performed, ought not to be grudged, to have ſo certain and valuable a return.

A year after budding, theſe trees may be removed to another nurſery, to ſtand two years longer before planting out for good, ſtill abating the downright roots, but encouraging thoſe that ſpread near the ſurface as much as poſſible; and here all too luxuriant and ſuperfluous branches may be taken away, and the plant reduced to the form it ought to remain in: From which practice, in two years more, it will be covered with bloſſoms, and loaded with fruit. But in this place it will be neceſſary to obſerve, and caution againſt a general error committed in the management of this and many other fruit-bearing trees, which is,

pruning them to a conſiderable height with naked bodies. This impairs the beauty of the plant, as well as the quantity and quality of the fruit, by exhauſting the ſap that ſhould feed it; for the trunk will be ſooneſt and beſt fed, and, therefore, the nearer the branches are to the ground, they will the ſooner, and in greater abundance, receive their proper nouriſhment.

THOUGH I have mentioned pruning this tree, yet I muſt adviſe it to be done as ſparingly as poſſible, and only while the branches are young and tender, as lopping the old wood commonly occaſions a gum and canker, that ſtunts and at laſt deſtroys the whole plant: But a little care and attention from the beginning may eaſily remedy this, by rubbing off the young buds where improperly placed; and this practice will longer preſerve them in ſtrength and vigour.

THE Black Cherry, for improving both the ſize and flavour of its fruit, ſhould be planted in a freſh, mellow, dry ſandy loam, for timber; it will grow to a large ſize in moſt dry ſoils, tho' poor and thin; but in wet ground, or ſtiff clay, it will not ſucceed to advantage. It is one of our hardieſt trees, of quick growth, and, its many good qualities conſidered, I have often been amazed that great numbers of them have not been planted univerſally in all extenſive deſigns.

THE wood is hard, ponderous, and durable; it poliſhes very ſmooth, and is uſed by the joiner for cabinets, chairs, and many uſeful purpoſes.

To the Black Cherry, being of the ſame genus, I ſhall add

THE BIRD CHERRY, in *Scotland* called the HAGBERRY.

THO', in catalogues, this is placed in the third or loweſt growing claſs of trees, that is, from fifteen to thirty feet high, yet I have ſeen it above forty, and have raiſed many of them myſelf above thirty feet, at ſixteen years old. It is a plant of extraordinary beauty when in bloom, the bloſſoms being ſo thick as to cover the leaves, when the whole tree is as white as ſnow, and has an admirable effect amongſt other flowering plants.

IT grows freely from cuttings, which ought to be planted in February, in a ſhady border, in drills cut down with the ſpade, about eight inches deep, and two buds of the cutting left above ground; let the lines be two feet diſtant, and the plants nine or ten inches in the line; where, keeping them clear of weeds, and digging the ground between them, they may continue two years.

AFTER that time, remove them to another ſpot, cutting away the ſuperfluous roots and branches, and plant them in lines, three and a half feet diſtant, and eighteen inches aſunder in the line; clean and dig the ground as before, and let them remain two or three years longer, when they will be of proper ſize to plant where they are to remain.

THIS plant is extremely hardy, and will grow in almoſt any ſoil, but chiefly affects a deep, moiſt, feeding mould, where it will make great advances ſuddenly. The wood of it is uſeful for many different purpoſes in huſbandry.

Chapter XVI.

The POPLAR TREE.

The Species *are:*

1. The white Poplar.
2. The black Poplar.
3. The trembling Poplar, or Aspin.
4. The Abele.
5. The white Poplar, with ſtrip'd leaves.
6. The Lombardy Poplar.
7. The Carolina black Poplar.
8. The Balſam Poplar from Canada.
9. The berry-bearing Poplar from Canada.

I SHALL begin with the four kinds of this tree firſt mentioned, that have long been commonly known to us, and then proceed to the others that have but lately been introduced to this country.

The firſt, ſecond, and third ſorts, are with the greateſt eaſe propagated by cuttings, planted in February or March; and tho' the fourth will likewiſe grow in that way on moiſt ground, yet it more readily ſucceeds by ſuckers taken from the roots of old trees, of which every one produces great numbers. Theſe cuttings or ſuckers being planted in the nurſery, in lines, two and

a half feet diſtant, a foot in the line, and eight or ten inches deep, will, in two years, be ſtrong plants, and fit to remove where they are deſigned to remain: But to be more expeditious, where ſhelter and ſhade are immediately required, procure truncheons or ſtraight poles of them, eight or ten feet high; make a hole with a hard ſharp ſtake, from eighteen inches to two feet deep, as the pole is longer or ſhorter; and in this place it, filling the hole full of water, and preſſing in ſome ſmall mould firmly about it, to keep the plant ſteady. From this cheap and ſimple practice theſe will grow freely, and in a few years become large trees; and thus their culture being ſo very eaſy, it is unneceſſary to ſay more on it.

Of all the trees our climate produces, I know none ſo great and general advantages might be derived from, as planting Poplars in the cold, wet, and uncultivated places of the country; they will grow luxuriantly in the pooreſt wet bogs, in the hungrieſt devouring clays, in burning ſand or gravel, as well as in the moſt ſteril barren moſs, and the quick advance they make in ſuch ſituations is amazing. I have meaſured ſhoots of the white Poplar eight feet long of one year's growth, and have often heard of much more; but there is hardly any land ſo wet and beggarly as not to produce them, three or four feet annually, for many ſucceſſive years.

The ſhade of this tree is ſalubrious and friendly, both to animals and vegetables, and their leaves, which are ample and thick, pregnant with rich ſweet juices, fall in ſuch abundance, as ſoon to create a ſoil that will produce good meadow, or paſture graſs, as the ſituation is moiſt or dry. To effect this, I would

adviſe theſe trees to be planted on ſuch otherways uſeleſs land, in lines, ten feet diſtant, and five aſunder in the line. In five or ſix years, take away every ſecond tree, which will leave them at twenty feet by ten; and in ſeven or eight years more, repeat the ſame, which will make them forty by twenty; at this diſtance they may remain till fit for the axe.

THE Poplar naturally produces many branches from their trunks when young, which ought to be cut away cloſe every third or fourth year, to the height of fourteen or ſixteen feet, to admit a free circulation of air to the ground, as well as promote the growth of the tree; and when the ſoil has thickened, which in a few years it will, ſow on it ſome white clover and natural graſs ſeeds, ſaved from an old upland paſture. In doing this, the land is not to be plow'd, but the ſurface frequently looſened by a light harrow with ſhort wooden teeth, till well pulveriſed; then cover the ſeeds, by drawing ſome buſhes lightly over them, and rolling the ground. This may be done any time from March till Auguſt, as the ſhade of the trees will prevent the ſeeds from periſhing by drought; but the ſooner after March the better, particularly where the land is very wet, as, by early ſowing, the roots of the graſs will be better eſtabliſhed, and not ſubject to be ſpew'd out in winter, which frequent light rollings early in autumn, when the weather is dry, will likeways much contribute to prevent. The ſecond ſpring after ſowing, when the ground will be well covered with graſs, and fit either for paſture or mowing, the trees may be diſbranched to the height of twenty-four feet, when the prunings will be uſeful for fuel, dead fences, and many other purpoſes in huſbandry. It is remarkable, and what I have often noticed, that, immediately under the ſhade and droppings from this tree, the graſs is ſooneſt eat by cattle.

AFTER theſe grounds have been paſtured for eight or ten years, ſuch of them as are tolerably dry may be converted into corn-land, by taking away the line of trees at twenty feet aſunder, which will leave the plantation at eighty feet by forty, a diſtance that will do little (if any) injury to whatever grows about it, but which, by alternately and judiciouſly varying the crops, will improve both the corn and graſs for ever.

THE leaves of no tree yet known has ſo good an effect in compoſt ſoil as that of the Poplar, nor will any ſo ſoon thicken the earth on which they grow, to which may be added that of its being a very handſome chearful plant.

THUS, at a very inconſiderable expence, large tracts of waſte land in theſe kingdoms, that now produce no uſeful thing, might, in a few years, be rendered beautiful, warm and fruitful. Should it not then be a reproach to the owners of theſe uncultivated places, that an experiment ſo eaſy and cheap, as putting a parcel of cuttings in the ground in ſuch a manner as here directed, is not tried? the ſucceſs of which is certain, and which, if judiciouſly practiſed by a few, would as certainly be followed by numbers to a very great and general improvement.

THE trembling Poplar does not grow to the magnitude of the other ſorts mentioned, and is therefore leſs proper than they for the purpoſes deſcribed, but is, amongſt all the trees yet known, the fitteſt for planting by the ſides of rivers, to prevent their incroachments.

THE wood of all the Poplars is uſed for different purpoſes, by the turner, the cart-wright, and cooper for hoops; and that of

the Abele (which is the beſt timber) is good both for flooring and wainſcotting rooms, being extremely white, and neither ſubject to ſplit, ſwell, or ſhrink: But notwithſtanding theſe good qualities, in grounds intended to produce good and clean graſs, I ſhould rather adviſe the white and Lombardy Poplars, as not ſubject to produce ſuckers, which the Abele does in ſuch abundance as to deſtroy the graſs, or other crops where the land is not annually cultivated: For theſe reaſons, this tree ought to be planted at ſuch diſtances as to run quickly up for timber-trees, without other conſiderations.

The white Poplar with ſtrip'd leaves, is increaſed by budding it on the common white Poplar; but the variegation is faint, if not planted on a poor thin ſoil.

The Lombardy Poplar has been but lately introduced into Britain; it is a fine chearful pyramidal plant, grows yet faſter than the common kinds, and affords an admirable ſhelter to every thing it ſurrounds: It is propagated with equal eaſe as the others, by cuttings, and, ſo far as I have been able to obſerve, is as hardy, and will ſucceed in all the ſame kinds of land they do; from whence, if generally cultivated, there appears every reaſon to believe it will ſoon turn out to a national benefit.

The black Carolina Poplar is a very graceful plant, but is far from being ſo hardy as any of the other kinds, great part of the former years ſhoot being ſubject to periſh in hard winters, or where they are much expoſed; and therefore they ought to be placed in a well protected ſituation, and in a good deep, feeding, moiſt, but not wet ſoil: For tho', in their native climate, where

the winters are not ſo long as ours, they are moſt commonly found in watery grounds, and by the ſides of rivulets, yet, from many repeated trials I have made, I find they will not ſucceed in ſuch places here; neither ought they to be planted in thin dry land, where frequent waterings in ſummer will be required to keep them barely alive. The young branches of this tree, which grow in an angular manner, are very ſingular: Their leaves are broader than any of the other ſorts mentioned; and, from their buds in the ſpring, iſſues a very ſweet balſam.

THE Balſam Poplar was ſent in cuttings from Canada to Scotland five or ſix years ago, and being propagated with much eaſe, are now in the hands of many. It is, of all the ſpecies, by far the moſt beautiful and magnificent plant. The leaves are very large, of a light chearful green, and the bark of a ſmooth ſhining browniſh colour. I have ſeen it in various ſoils, both wet and dry, of a middling good quality, in all which it much exceeds the other ſorts in luxuriance of growth. Whether it will advance with equal facility as the common kinds, in very poor and expoſed ſituations, I ſhall not yet pretend to determine, as it has not been long enough amongſt us to make ſufficient experiments; but, from all the obſervations I have been able to make, it appears a hardy plant, from whence there is reaſon to hope it may; in which event, it will be an acquiſition of the higheſt importance, both in point of uſe and beauty to our foreſts; and as, if I live, trials ſhall immediately be made in the fulleſt manner, this circumſtance will ſoon be determined.

THE berry-bearing Poplar was introduced to us at the ſame time, and in the ſame manner as the balſam kind. It is like-

wiſe a plant of much elegance, not quite ſo broad in the leaf as the other, but of a gay lighter green and whitiſh bark, deeply furrowed.

In the beginning of March, let the cuttings of theſe trees, a foot long, be planted, eight inches deep, in well-prepared ſoil, of a good quality, in lines, three feet aſunder, and the plants ſixteen or eighteen inches diſtant in the line, when, after two years ſtanding, they may be removed to where they are deſigned to remain.

Though, as has been obſerved, theſe plants appear, and I believe are, or will become very hardy, yet I muſt notice, that, having planted ſome of their cuttings in rich, and others in poor and leſs cultivated ground, I have loſt a conſiderable number of thoſe in the poor, while not one of a hundred has failed in the generous ſoil; from whence I naturally conclude, that in making plantations of them in coarſe, barren, or cold ſituations, the nurſed plants are much preferable to cuttings, though this is no argument againſt their becoming very hardy when advanced in growth. But whatever their ſucceſs may be in forbidding ſoils and climates, we have, in the mean time, the ſtrongeſt motives to encourage them for ornamental plantations in thoſe that are favourable.

CHAPTER XVII.

THE *LOTE*, OR NETTLE TREE.

The SPECIES *are:*

1. The NETTLE TREE, with black fruit.
2. The NETTLE TREE, with purple fruit.
3. The NETTLE TREE, with large yellow fruit.
4. The Eaſtern NETTLE TREE, with larger leaves and fruit.

THE firſt of theſe trees is a native of Europe, the ſecond and third of America, and the fourth was diſcovered by the late Dr Tournefort in the Levant, who ſent its fruit to the Royal Garden at Paris, where they were raiſed, and from thence ſoon introduced to the Britiſh gardens. They are all of them hardy enough to bear our ſevereſt winters, in ordinary ſituations, after three or four years old, and, being a tree of admirable ſhade, beauty, and uſe, deſerves to be generally cultivated.

IT may be raiſed either from ſeeds, (which if you can procure, is the beſt method), or by layers: If from ſeeds, ſow them in the ſpring ſoon after they are ripe, (which is commonly in January), in pots or boxes, about a foot deep, full of holes in the bottom, covered with oyſter-ſhells or broken tyles, and three or four inches thick of rough ſtoney gravel above them, to drain the moiſture, and prevent the earth from becoming heavy and ſour:

Then fill the pots or boxes, within an inch of the top, with rich looſe compoſt mould; ſow the ſeeds, and ſift over them half an inch more of the ſame quality of earth. Few of theſe ſeeds will appear till the following ſpring; but the pots or boxes ought not to be ſunk in the ground, as is too commonly practiſed by ignorant gardeners, in order, as they ſay, to keep them moiſt; and, in fact, by lazy ones, to prevent the trouble of watering them, but which, by detaining the water, rots more ſeeds and plants than any other circumſtance of ill management I know; beſides, thoſe that eſcape are poor, ſtarved, and ſtunted ſtuff: Therefore let them be raiſed or eight inches above the ſurface of the ground, ſupported by ſtones or logs of wood, and placed where they may receive the morning ſun only, till autumn, when they ſhould be removed under a ſouth wall, and continue there till the weather turn ſevere, during which time they ought to be put under a covered frame, but the glaſſes or other covering taken conſtantly off in mild weather. About the beginning of April after, remove the boxes to their firſt ſituation; looſen the ſurface gently with your fingers, picking away the foggy or mouldy parts, and ſift on a little freſh earth in proportion. About the end of April, the bulk of the plants will appear above ground, when they muſt be frequently but moderately watered in the evenings when mild, but in the mornings, when inclined to froſt, kept perfectly clean during the ſummer months, and protected as in the preceding winter in ſevere weather.

The plants being a year old, raiſe them carefully out of the boxes, ſhorten the downright roots, and manage them as directed for the Tulip-tree during their abode in the nurſery; with

which culture they will very well agree, till planted where they are to remain for good.

If you intend to propagate them by layers, let this be performed as ſoon as the leaves begin to tarniſh, about the end of September, or early in October. The wood of this tree being extremely hard, will not root ſufficiently till the ſecond year, unleſs the ſummer is uncommonly wet, or you aſſiſt them with regular and plentiful waterings; therefore, if you mean to ſave a ſeaſon, let this be particularly attended to.

When you find they have rooted abundantly, in the end of March, or beginning of April, take away the earth from about the layer, of which be very tender, and with a ſharp knife cut it off beyond the joint, where, if properly laid, the roots will principally be; prune away all but the ſtrongeſt and ſtraighteſt ſhoot, and plant them in a nurſery of good freſh ſoil, in rows, at two and a half feet diſtance, and a foot aſunder in the row; give them frequent waterings till the roots are well eſtabliſhed; keep the ground clean, digging it between the rows in autumn and ſpring, and let them remain here two years.

These trees may now be either planted out for good, or removed to another nurſery, cutting off the extremities of their roots and all ill-placed branches, and placed in rows three and a half feet diſtant and eighteen inches in the row, treating them as formerly, and letting them remain for three years.

The Nettle Tree will ſucceed in any ordinary land, but moſt delights in a deep moiſt ſoil, where they will ſoon become ſtate-

ly trees; and their fine regular ſpreading heads, of chearful green, renders them extremely proper, either for clumps in parks, groves, ſingle trees, or avenues.

NEXT to the *Platanus* this plant was moſt eſteemed by the antient Romans, both for its grateful ſhade, and timber immortal, as they ſtiled it. Of this the vaſt ſum offered by Craſſus to Domitius for half a dozen of them, growing about his houſe in Rome, is an inconteſtible proof. It is doubtleſs amongſt the hardeſt wood of any we know: It was formerly uſed for pipes, and all kinds of wind-inſtruments; and the roots make excellent handles for knives, with many different kinds of tools that require ſtrength and ſolidity.

CHAPTER XVIII.

THE *LABURNUM*, OR BEAN-TREFOIL.

The SPECIES *are:*

1. The broad-leav'd LABURNUM.
2. The narrow-leav'd LABURNUM, with long pendulous flowers.
3. The broad-leav'd LABURNUM, with very ſhort pendulous flowers.

THESE trees are propagated by ſowing their ſeeds (which they annually produce in plenty) in March, on a bed of freſh earth, covering them about half an inch thick; and, in four or five weeks, the plants will appear above ground, when ſome gentle waterings in dry weather will much promote their growth.

THE following February or March, remove them from the ſeed-bed to the nurſery; ſhorten their roots, which are naturally carroty, but which are not injured by cutting them freely when young; plant them in lines, two and a half feet diſtant, and a foot aſunder in the line; keep them clean; dig the ground between the lines in autumn and ſpring, and let them remain two ſeaſons.

FROM hence remove them, in October or February, to another quarter; ſtill continue to reduce the roots that incline down-

wards, and ſmooth the extremities of the ſpreading ones; prune off all ill-placed lateral branches, but leave ſome of the ſmalleſt at proper diſtances; for this tree, making prodigious ſhoots when the ſide-boughs are all cut off, bends with its own weight, and is afterwards with difficulty redreſſed. This being properly performed, plant them in lines, five feet diſtant, and two feet aſunder in the line; manage them as formerly directed, and prune them annually to their proper form; in which ſituation they may remain three or four years, as your occaſions require, by which time they will produce their flowers, and make an agreeable appearance in whatever plantation you place them.

It ſeems to me ſomewhat ſtrange, that the *Laburnum* has not been univerſally cultivated in large quantities, it being a plant of admirable beauty in May when in bloom, and propagated with the greateſt eaſe, and ſmalleſt expence, of moſt trees. It will ſucceed in various ſoils, and even in that which is very poor and hungry; but where there is any conſiderable depth of tolerable mould, the progreſs it makes is amazing. Though I do not remember to have heard the quality of the wood recommended by any author, yet I am well aſſured it is very valuable for ſundry purpoſes, and by ſome preferred even to mahogany for its ſolidity and beautiful colour, which is bright yellow, veined with dark purple; and I myſelf have ſeen a large table and a dozen chairs of it, in the poſſeſſion of a noble Lord, which good judges of elegant furniture thought the fineſt of thoſe kinds they had ever ſeen.

I have one further hint to give in favour of this plant, which alone makes it claim much attention, and that is, mix-

ing them in all plantations infeſted with hares, who are ſo fond of them, that while a twig remains, no other plant will be touched, and though eat to the ground every winter, they will ſpring with additional vigour the ſucceeding ſummer, and conſtantly ſupply theſe animals in luxury. This, to my certain experience, may be depended on; and the produce of five ſhillings worth of ſeed, properly raiſed and diſtributed, will furniſh plants enough to protect 500,000 other trees. Many expenſive and laborious experiments have been ineffectually tried to protect young plantations from theſe rapacious enemies: Here is a cheap and no leſs certain remedy; and, however ſimple the diſcovery may appear, the effects of it will be of the higheſt conſideration to every planter who puts it in practice.

CHAPTER XIX.

THE ALDER TREE.

THIS tree delights in wet boggy land, and will even grow where water ſtands conſtantly, but, if planted in dry ground, is moſt pernicious and devouring, as, by attracting all the moiſture and generous juices from the earth, it will ſoon render it totally barren. From fifty to twenty years ago, vaſt quantities of theſe plants were brought from Holland to this country, at a conſiderable price, and, unhappily for the owners, planted in large tracts of moiſt land, from whence no returns ſuitable to the labour and expence have been received. Had the ſame money been beſtowed on planting Poplars and Abeles, they would by this time have highly increaſed the value of ſuch eſtates, and become a general improvement; whereas the injudicious choice of Alders has proved a bad example to young planters, and probably deterred many from planting at all, who otherways might have choſen handſomer and more profitable trees.

THEY are eaſily propagated by layers, or by cuttings of three, four, or five years growth, planted in February or March; but being an ugly melancholy tree, I chuſe to ſay no more of it, as ſundry aquatics, of greater beauty and value, will grow abundantly faſter in the ſame ſituations they affect; and it is only to warn the unexperienced planter againſt the frequent uſe of them, that I have mentioned a tree I ſo much diſlike.

CHAPTER XX.

THE BIRCH TREE.

The SPECIES *are:*

1. The common BIRCH TREE.
2. The Poplar-leav'd BIRCH TREE.
3. The Canada BIRCH TREE.

THE common Birch may be propagated either from ſeeds or ſuckers taken from the roots of old trees, but the ſeedlings make the handſomeſt and beſt-rooted plants. I ſhall therefore firſt direct their culture in that way, which, though one of the hardieſt and moſt common trees our climate produces, (of which it is a native) yet is it ſeldom ſucceſsfully raiſed from ſeeds, which is generally owing to too much covering, and which it will by no means bear, as the plants, when they firſt vegetate, are very delicate, and unable to force their way through any conſiderable depth of ſoil; but by obſerving the following ſimple practice, you will procure them in abundance:

THE ſeeds of the Birch are ripe about the end of September or beginning of October, when, having gathered them in a fair clear day, ſpread them thin on a loft floor till dry; after which, mix them with looſe ſand, and keep them in an airy place till the beginning of the following March. The ground for ſowing them, which ought to be freſh and light, having been trenched or dug the preceding autumn, point it over again, making it as looſe as poſſible, and raking it very fine; divide it in beds, three and a half feet wide; ſow the ſeeds, and clap them into the ground with the back of a ſpade, without any earth thrown over them.

If the weather is moiſt and mild, no further care is neceſſary; but if dry and froſty, which is often the caſe at this ſeaſon, throw a little peaſe-haulm over the beds, for three or four weeks, till the ſeeds begin to vegetate, which will keep the ground moderately moiſt, and defend them from being injured by froſt, or deſtroyed by birds, who are very fond of them. About this time uncover the beds, keep the ground quite clean, and give them three or four gentle waterings about noon, from the middle to the end of April, the weather being mild and dry; which repeat more plentifully and frequently from thence till the middle of June, in mild evenings, when they will require no further attention.

The following March, remove theſe plants from the ſeminary to the nurſery, ſhortening their top-roots, and plant them in lines, two and a half feet diſtant, and about ten or twelve inches aſunder in the lines; to ſtand two years, if the land is good, and the plants have grown freely; but in poor thin ſoil, where their progreſs has been ſmall, they may continue three years; in which caſe, after the ſecond year's growth, cut over ſuch of them as are leaſt thriving or crooked, cloſe by the ground, in March, which will give them ſtraighter and more vigorous ſhoots.

Those taken from the roots of old trees, or ſeedlings grubbed up from the woods, cannot have ſo good roots or free ſhoots as plants raiſed in a clean well cultivated nurſery-bed, and therefore will of courſe require more time and attention to make them equally good trees: For this purpoſe, having procured the plants with all the roots poſſible, ſhorten ſuch of them as incline to run downward; cut away ſuch as are broken or bruiſed,

with all the muſty parts naturally contracted in the woods for want of air; reduce likewiſe the tops of ſuch as are too tall or heavy-headed, and lay them in drills cut down with the ſpade, at the ſame diſtances directed for the ſeedlings, in depth proportioned to the ſize of the plants, the moſt certain rule for which, in this and all other trees, is placing them as deep only as they have naturally ſtood before; water them at planting, keep the ground clean, and dig between the lines in the ſpring. Having ſtood here two years, cut them all over by the ground, and let them remain two years longer, when they may be removed for good.

THE ſecond and third ſorts will bear our winters well enough, when mixt with and ſheltered by other plants: They may be propagated either by layers or budding them on the common kind; but it is uncertain raiſing them by ſeeds from America, which do not vegetate, if kept long out of the ground.

THE Birch is a handſome plant; and though the wood is not amongſt the moſt valuable, yet it is uſeful for various purpoſes; and no tree is more required by the country people, for their houſes, or for ploughs, and other inſtruments of huſbandry.

THE late Earl of Hadinton, the greateſt, moſt judicious and ſucceſsful planter of his time in this country, juſtly calls the Birch an amphibious plant, as it grows on rich and poor, wet and dry, ſandy or rocky ſituations, nor refuſes any ſoil or climate, and its fragrant ſmell after rains juſtly intitles it to a place in the wilderneſs; to which I ſhall only add, that by wounding the tree in the ſpring, is extracted a large quantity of juice, that, fermented, becomes a ſpirituous, delicious, wholeſome liquor.

CHAPTER XXI.

THE SERVICE TREE.

The SPECIES *are:*

1. The true SERVICE TREE.
2. The manured SERVICE TREE.
3. The Maple-leav'd SERVICE TREE.
4. The Virginian wild SERVICE, with leaves like the Strawberry tree.
5. The common wild SERVICE TREE.
6. The White BEAM, or AREA THEOPHRASTI.
7. The Quick BEAM, in *England* commonly called the MOUNTAIN ASH, in *Scotland* the ROWAN TREE.
8. The Quick BEAM, with ſtrip'd leaves.

THESE plants, though not uſually propagated for common Foreſt-trees, are yet well worth our attention in all collections for ornament; and both their ſweet ſmelling bloſſoms early in ſummer, and large bunches of bright red fruit in autumn, have a very pleaſing effect in the wilderneſs, or in clumps in parks, lawns, *&c.*

THEY are all to be propagated by the ſowing their ſeeds; but the four ſorts firſt mentioned, like many other fruits, ſeldom

produce the ſame kind of plants from whence the ſeeds were taken; and therefore, to preſerve the different ſpecies, they muſt be increaſed by layers, or by budding and grafting them on the common ſorts, or Pear-ſtocks. Theſe budded or grafted will make better plants than the layers, and on the Pear-ſtocks they will ſooner become fruitful, and bear fairer fruit than on ſtocks of their own ſpecies. I ſhall therefore proceed to the other kinds, of which I have raiſed great quantities from ſeed, without any variation from the parent tree.

HAVING provided the berries in October, diveſt them of the pulp, by rubbing them between your hands in water, and after that with ſand, in which preſerve them till the firſt dry weather in ſpring, and ſow them on beds of rich well-prepared looſe earth, three and a half feet broad, covering them one inch thick. Few of theſe ſeeds will appear above ground till the following ſpring, but the beds muſt notwithſtanding be kept perfectly clean during the ſummer months; and as ſoon in February as the weather will admit, with a ſhort-teeth'd rake, dreſs and looſen the beds, throwing on ſome freſh ſoil in proportion to the hard and foggy parts you have taken off; and by the beginning of April, the weather being dry and not froſty, water them gently in the mornings once a week till July, which will much encourage their growth.

FROM the ſeed-bed remove them the following ſpring, ſhorten their top-roots, and plant them in well-prepared rich ſoil, in rows two feet diſtant and a foot aſunder in the row, where they ought to remain two years, keeping the ground clean in ſummer, and digging between the lines in ſpring and autumn.

HAVING ſtood here two ſeaſons, remove them to another nurſery, cutting away all croſs downright or ſuperfluous roots; but be ſparing of the other ſpreading ones, and only ſmooth them at the extremities: Plant them at three and a half feet by eighteen inches aſunder, treating them as formerly, to remain three years, when they will be of a proper ſize to remove where they are intended to continue for good.

THOUGH the fifth, ſixth, and ſeventh ſorts, will, any of them, anſwer for ſtocks to bud the other kinds on, yet of theſe the White Beam will make the beſt plant, tho', as has been ſaid, the Pear-ſtock is better ſtill; therefore, ſuch of theſe as are intended to be budded, ſhould be pick'd out, the moſt vigorous plants of a year's growth, and planted on generous ſoil, at the diſtance of three feet by fourteen or ſixteen inches, budded the ſecond ſummer after removal, and ſtand two years longer after budding, when they may be removed for good.

THE Quick Beam with ſtrip'd leaves, muſt likewiſe be increaſed by budding, and ſucceeds beſt on ſtocks of its own kind.

THESE trees in general affect a ſtrong moiſt ſoil, though the fineſt plants of the Quick Beam I have ever ſeen, were on dry elevated ground: Their wood is much uſed by the wheel-wright, as well as for many purpoſes of huſbandry, and is excellent fuel: Their berries are the moſt tempting bait of any fruit for the black birds and thruſhes, who will never fail of giving their company ſo long as they laſt.

CHAPTER XXII.

THE JUDAS TREE.

The SPECIES *are:*

1. The common JUDAS TREE.
2. The Canada JUDAS TREE.
3. The Carolina JUDAS TREE, with pointed leaves.

THE firſt of theſe is a native of the warmer parts of Europe, and abounds in Italy, Spain, and the ſouthern parts of France.

THE ſecond ſort is common in Virginia, New-England, Canada, and moſt of the northern countries of America, where it is called Red Bud, from the beautiful colour of its flower-buds.

THE third ſort is a common plant in the woods of Carolina, but differs from the other two in the form of its leaves, which are pointed, the former being nearly round; the flowers of this too are ſmaller, and the plants, for three or four years, require a little more ſhelter in caſe of hard winters, after which they will bear our climate perfectly well in an ordinary ſituation.

THESE trees may be propagated by layers, which will make handſome enough plants if properly trained; but the ſeedlings

are ſtill better, and ſeeds from the places of their native growth are preferable to thoſe ſaved in Britain, being larger and better ripened.

As ſoon as thoſe ſeeds are either received from abroad, or gathered at home, after having been made quite dry, let them be mixed with looſe ſand, and preſerved from froſt and wet till the middle or latter end of March, as the weather is more or leſs favourable. About this time ſow them on a bed of rich mellow dry ſoil, and cover them half an inch deep. In four or five weeks, the plants will begin to appear, when the bed ought to be hooped over, and, when neceſſary, covered with mats, firſt to protect them from the cold froſty winds frequent at that ſeaſon, and exceſſive rains which ſometimes burſt them, and afterwards to ſcreen them from the ſcorching heat of the ſun, which will much accelerate their growth. From their appearance above ground, they muſt be gently tho' frequently watered in the mornings while the weather continues cold, but afterwards in the evenings when mild. In this ſituation they will require no more trouble, than, in caſe of a ſevere winter, throwing the mats over them in ſtorms, and removing them regularly as the air becomes temperate.

The ſucceeding ſpring, as ſoon as the buds begin to ſwell, remove the plants from the ſeminary to a nurſery of the ſame kind of well-prepared looſe ſoil; ſhorten the top-roots, and plant them in rows two feet and a half diſtant, and about a foot aſunder in the row; give them a gentle watering, which ought to be frequently repeated in the evenings of dry weather during the ſummer months, and keep the ſoil about them clean and

mellow. Theſe trees naturally grow in a wild irregular manner, and, when left to unaſſiſted nature, are rather of the buſhy Shrub kind. To correct this defect, place a ſtake firm by the ſide of each plant; and as it advances in height, tie the leading ſhoot to it with a piece of ſoft baſs, which direction it will afterwards retain, and the plants will grow ſtraight and regular. In caſe the following winter ſhould prove ſevere, it may be neceſſary to throw ſome peaſe-ſtraw over the ground, to keep the froſts from injuring the roots, and, the ſucceeding ſpring, let it be dug into the ground between the rows. At this time let all the low-growing branches of the former year be cut cloſe away, that they may not impede the vigorous growth of the leading ſhoot, which muſt be conſtantly tied to the ſtake as it advances in height; but tho' the loweſt, all the ſmall branches are not to be taken away, that the main one may not be drawn too tall and ſlender, but advance with bulk proportioned to its height. If theſe circumſtances are attended to, the plants will only require the additional trouble of keeping them clean during their abode here.

The Judas tree ſhould not remain longer than two years in the ſame nurſery from the ſeed-bed, and therefore, the ſucceeding ſpring, may either be planted out where they are to remain, or (which I would rather adviſe) be committed to another nurſery, and planted at greater intervals, for two years longer, where they may be treated in the ſame manner as has been directed; by which time, they will be large, handſome, hardy plants.

Tho' the above method of culture is the cheapeſt and eaſieſt for raiſing great quantities of theſe trees, yet to ſuch as are

above the regard of common expence, and want to promote their growth as faſt as poſſible, a readier practice may be followed, and which, for three or four years, will make the plants double the ſize of thoſe raiſed in the natural way.

For this purpoſe, the beginning of March, ſow the ſeeds thin in penny-pots, and plunge them to the rim in a moderate hot-bed of tanners bark, rather than horſe-dung; the heat of the bark being more equal, laſting, and leſs ſteam ariſing from it, than that of the dung. When the ſeeds have been a week ſown, they muſt be very gently watered every third or fourth day; after the plants come above ground, every ſecond day, and the quantity of water increaſed as they advance in growth. When the plants are about five or ſix inches high, which may be about the beginning of May, draw out the ſtrongeſt of them, leaving the ſmaller in the ſituation they were in; plant each of thoſe in a ſeparate penny-pot, and plunge them again into another moderate hot-bed, watering them frequently and plentifully, covering the glaſſes with mats when the ſun ſhines in the heat of the day, to prevent their being ſcorched, and admitting a proper quantity of air to them, that they be not over-drawn. In this condition they may remain till about the firſt of Auguſt, when the bark will have loſt moſt of its heat, and when the pots may be taken out of it, but ſtill kept in the frame, though more and more expoſed to the open air daily, till the glaſſes are taken away wholly during the mild weather of the autumn months. On the approach of winter, the glaſſes muſt again be replaced on their frames, to protect the plants in ſevere ſtorms only; but they ought to be fully expoſed to the open air, when the ſeaſon is temperate.

THE following ſpring, let the ſmall plants that remained in the pots where ſown, be carefully ſhaken out of them, and divided ſo as not to injure their tender roots and fibres; cut away with a ſharp knife the extremities of their downright and ſtraggling roots, and put them in ſeparate pots of the ſame ſize; plunge them again with the others that were unpotted the preceding ſummer, in a freſh tan-bed, till the month of July, by which time they will have made vigorous ſhoots, and the pots be full of roots; harden them by degrees, and treat them as in the former year; only, as the plants will be much ſtronger, and of courſe more hardy, they may be more ſuddenly expoſed to the open air, and need not ſo much protection the following winter, even in hard weather.

WHEN the ſap begins to riſe, the ſucceeding ſpring, carry theſe pots to the quarter of the nurſery where you intend to plant them, which ſhould be as nearly as you can ſuch a ſoil as deſcribed for the ſeedlings, and ſheltered a little by trees or hedges; make pits with a ſpade, at three feet diſtance by two, as deep and ſomething wider than the pots, from which ſhake them carefully out with their whole bulk of earth, which may eaſily be done without injuring their ſmalleſt root; place them upright, and no deeper than they have ſtood before; give them a plentiful watering; prune away the under branches, and any others that are ill-placed, and fix a ſtrong ſtake by each of them that inclines to be crooked, to which tye the leading ſhoot; and in this ſituation let them remain two years, digging the ground about them in autumn and ſpring, and continuing to prune away all ſuperfluous ill-placed branches, when you may tranſplant them to the places where they are meant to remain for good.

By attending to what has been ſaid on the propagation of thoſe plants, they can be raiſed with ſuch abundance of roots, as not to be retarded in their growth, or feel the ſmalleſt check on their removal.

If I have been tedious in directing the management of the Judas Tree, it is becauſe I think it a plant of ſingular elegance and beauty, when aſſiſted by proper culture, which is far from being the common caſe; and I cannot help thinking, it is from not attending to that, we ſee it ſo very little propagated, even by men of knowledge and obſervation in gardening. In its natural ſtate, indeed, it grows in an irregular ſtraggling manner; but by leading the principal ſhoot, as here directed, it may eaſily be elevated to the height of twenty-five feet or upwards. The flowers are of a beautiful red colour, tinged with crimſon and purple; the leaves, a fine deep green, large, and nearly round. The flowers appear before the leaves are expanded, and, in well-grown trees, are ſo numerous as almoſt to cover the branches, which altogether renders it one of the greateſt beauties of the ſpring.

CHAPTER XXIII.

THE ELDER TREE.

THIS tree is little planted but for the ſake of its berries, of which they make wine, and likewiſe uſe them for ſundry other purpoſes; but it has other good qualities than theſe to recommend it, and in bad climates, and cold barren ſoils, it may become a valuable plant.

IT will grow in wet and dry, cold and hot, and indeed in all kinds of ſoil, amazingly faſt; and in the moſt forbidding ſituations, where thorns and the better kinds of hedge plants will not ſucceed, by putting in ſtakes of the Elder, of four, five, or ſix years growth, about three feet high, planted a foot deep, and about a foot aſunder, you may in three years have hedges that will reſiſt the wildeſt cattle, and by their warmth much improve the ground. Theſe hedges being cut cloſe to the body of the plants every third or fourth year, will branch out again more numerouſly than ever, and afford a conſtant ſupply of fuel, which, in many ſituations, might prove a bleſſing to the poor inhabitants. It might alſo be uſed to much advantage in better ſituations intended for plantations of the moſt valuable Foreſt-trees, by planting them thick in lines acroſs the moſt expoſed places of the field, where, by their quick growth, and the excellent protection they afford againſt tempeſtuous and froſty winds, they will highly contribute to the ſpeedy advance of ſuch

plantations; and the Elders may be cut down by degrees, as the other trees advance.

However much this plant is generally diſregarded, it is notwithſtanding a handſome chearful tree, and, when covered with its numerous cluſters of white flowers in ſpring, and purple berries in autumn, has a very agreeable effect in lawns, clumps, *&c.* But I would by no means adviſe its being planted in the wilderneſs or foreſt promiſcuouſly with other trees, as their creeping roots, that extend a great way, would rob the other plants near them of their proper nouriſhment; neither ſhould they be placed in any quantity near habitations, where the ſtrong ſcent emitted from their flowers will occaſion pains in the head; but, for the firſt-mentioned purpoſes of nurſing other plants, diſpoſed at proper diſtances from them, they deſerve attention.

CHAPTER XXIV.

THE TACAMAHACA TREE.

THIS tree grows ſpontaneouſly on the continent of America, where the inhabitants wound the bodies of them in the ſpring, from whence flows a balſam much eſteemed by the phyſicians in thoſe countries; and it is hardy enough to bear our ſevereſt winters.

IT is eaſily propagated by cuttings planted about the middle of February, in rich mellow earth, ſhaded from the mid-day ſun, and watered in dry weather, where, in one year, if the cuttings were ſtrong, they will grow upwards of three feet high.

THE ſucceeding February, remove the cuttings to a nurſery of any good middling deep ſoil; ſmooth the extremities of their roots; cut off the ſtrong ſide branches, and plant them in rows three feet diſtant and eighteen inches aſunder in the row; give them a plentiful watering; keep the ground clean; dig between the rows in autumn; and let them continue in this nurſery two or three years, when they may be tranſplanted to the places in which they are intended to remain.

THIS is a quick-growing graceful plant, and juſtly claims a place in the wilderneſs, or other ornamental plantations. The

leaves are long, thick, of a bright ſhining green, with their under ſides of a lively ſilver hue, which, when waving with the wind, makes an agreeable diverſity. The buds are covered with a dark glutinous balſam, which ſmells very ſtrong, and adheres to the fingers on touching them; and they warn us, with the earlieſt plants, of the approach of ſpring. They will grow in any ordinary ſoil, but moſt affect that which is mellow and deep. Where there are void ſpaces in the wilderneſs, occaſioned by the death of other trees, this planted, and let grow in its natural manner, which is thick and buſhy, will ſooner ſupply theſe defects handſomely than moſt other plants.

EVERGREENS.

CHAPTER XXV.

THE PINE TREE.

The SPECIES *are:*

1. The Scots PINE, commonly called the Scots FIR TREE.
2. The manured PINE TREE.
3. The PINASTER, or wild PINE TREE.
4. The large Stone PINE TREE.
5. The ſmaller Stone PINE TREE.
6. The Cluſter PINE TREE.
7. The Eaſtern PINE TREE.
8. The Swamp PINE TREE, with long narrow leaves.
9. The Jerſey PINE TREE.
10. The Virginian PINE TREE, with long narrow leaves, and a rough cone.
11. The Virginian PINE, commonly called the FRANKINCENCE TREE.
12. The New England PINE TREE.

THERE are many other ſorts of Pines mentioned by different authors on Gardening and Botany; but theſe, from experience, and what obſervations I have been capable of making,

are moſt worthy of general culture in the climate of Great-Britain.

I SHALL begin with deſcribing the common method in Scotland of cultivating the Scots Pine or Fir, from which practice, many millions are annually raiſed and planted out amongſt us; and then, as ſhortly as I can, hint what circumſtances I have long found an improvement on that practice.

THE uſual way is, to gather their cones in winter, and ſow the ſeeds about the end of April or beginning of May; but as before that ſeaſon of the year, the ſun has ſeldom power enough to open the cones, they have recourſe to laying them before a hot fire, or upon a kiln, which, if not done with great caution, and the heat made very temperate, totally deſtroys a great part of the ſeeds, or in all events, though done with diſcretion, it weakens the whole. Little obſervation, and leſs philoſophy, will ſhow this practice oppoſite to nature.

THESE ſeeds however, the beſt they can get, are ſown at the ſeaſon before-mentioned on beds of well-prepared earth, extremely thick, and covered about a quarter of an inch deep, where they remain two years.

FROM the ſeed-bed, ſuch as are not demanded, the gardeners remove to the nurſery, where they are ſtill planted out very thick, and from thence ſold the following or ſecond year after, as the demand happens to be more or leſs.

MUCH the greateſt quantity of Scots Firs are planted out in Scotland from the ſeed-bed, and ſuch are generally (tho' ſurely

very injudiciouſly) choſen for the moſt hungry barren ſoils, and moſt bleak expoſed ſituations, where, from the natural hardineſs of the plant, in kindly moiſt ſeaſons, they frequently grow; but where, if the following May is accompanied with cold withering froſty winds, and June with drought, (a circumſtance, from fatal experience, we too often find the caſe in this climate), they generally periſh.

THIS, however, though a too frequent, is not an univerſal practice, as ſeveral gentlemen, of knowledge and experience in gardening, plant large quantities of them from the nurſery at three and four years old, when, if they have been tolerably well cultivated, it muſt be a very bad ſoil and ſeaſon indeed if they do not ſucceed.

SUCH is the common method of propagating this plant: It remains I ſhould direct its culture in the way I have ſucceeded better than uſual.

I HAVE obſerved, that the ſeeds of this tree are rarely, if ever, got amongſt us in full perfection, and given my reaſons for it. To gather the cones therefore fully ripe, and make them emit their ſeeds, without committing violence on them, obſerve the following rules:

THESE cones, as thoſe of the Larch, increaſe in maturity during the whole winter, and, like them, ſhould not be gathered till ſpring, though their management afterwards is much more ſimple, being with more eaſe diveſted of their covering.

Let them therefore be gathered from the faireſt and moſt flouriſhing trees of the red kind (or if fallen from them, they are ſo much the better) in March or April, and kept in a dry place till June, July, or Auguſt, as the weather ſooner or later becomes hot: At the moſt favourable of theſe ſeaſons, ſpread them on a mat or canvaſs expoſed to the ſun during the heat of the day, taking them under cover in the evenings, and keeping them conſtantly from the rains and dews. In a few days the cones will expand, and the ſeeds will rattle within them: When this comes to be the caſe, put them in a wire-ſieve, and ſhake them above a cloth, on which you will find many of the ſeeds come out; repeat the ſpreading of the cones in the warmeſt expoſures to the mid-day ſun for ſeveral days, (as the ſeeds will not all be diſcharged perhaps for ſome weeks, and with ſundry ſhakings), till having bruiſed ſome of the cones, you find they contain no ſeeds that are plump and freſh. Having thus procured them, let them be kept in boxes or bags, placed in a dry room, till the ſeaſon of ſowing.

By collecting your ſeeds in this manner, (and the expence or trouble is not great), you will have them unhurt, ripe and generous, a pound of which will raiſe more plants than ſix of that uſually bought from the ſeed-gatherers: Nor is even this the greateſt advantage; for every gardener knows, (or at leaſt ought to know) that on the good quality of the ſeed depends the future luxuriant growth of the plant, as a diſeaſed or weak parent is not likely to produce a healthy and vigorous offſpring. It is much to be wiſhed this circumſtance were more attended to than it uſually is, both in the animal and vegetable creation.

I PROCEED to the management of the ſeeds, from the practice of which I have found uncommon ſucceſs in the culture of this uſeful plant; and the public may be aſſured, I ſhall not give a hint on the ſubject, the benefit of which I have not been fully ſenſible of from long and frequent experience.

FROM ſowing the Fir ſeeds ſo late in the ſeaſon as they commonly are, they do not appear above ground till the weather is warm, and the greateſt drought uſually begins in this country. Thus they muſt either be regularly watered, (which in large quantities is very expenſive), or whole quarters of them may periſh in a few days. Every nurſeryman of the leaſt obſervation will acknowledge this, having felt it to his ſad experience. It has happened often within theſe twenty years paſt; and we need go no farther back than the year 1771, for a fatal example of it, when not only the Scots Firs, but all the other evergreen tree-ſeeds were generally burnt up, nor in many ſituations did even watering preſerve them. Neither is this the only misfortune that frequently attends late ſowing: There is another, and a very great one, that never fails, and that neither a kindly ſeaſon, nor good ſoil, will prevent, that is, the ſmall growth of the plants; from which, if the ſucceeding winter is ſevere, the greateſt part of them will either be killed, or ſpewed out of the ground.

To prevent theſe frequent misfortunes, I therefore adviſe to ſow the ſeeds in ſhady borders of generous looſe mould, at the rate of a pound of good ſeeds in a bed or beds of ſixty feet long by three and a half broad, about the middle of March, or

as ſoon after as the land is dry, and the weather favourable. About a quarter of an inch thick will be ſufficient covering for the plants to ſpring through; but if they are covered at firſt half an inch, and juſt as the ſeeds begin to vegetate, half of that be gently raked off with a ſhort-teeth'd rake, it will be a material improvement, as by that means the ſurface, which otherways would have been a little hard and battered, will be looſe and mellow, nor will the plants meet with any obſtruction till their appearance above ground. This circumſtance, which, ſo far as I have ſeen, is not attended to at all, is yet of great importance in the culture of plants, and ſhould not only be practiſed with all the evergreen tribe, but indeed with all tree-ſeeds in general, as it will greatly increaſe the number, and accelerate both their preſent and future growth. Many thouſands of plants, in ſtiff ground and dry ſeaſons, are ſmothered, being unable to ſtruggle with a hard-cruſted ſurface, for want of this precaution; and however general the neglect of it has been, it is too obvious to require further explanation, as every gardener of common ſenſe, and the leaſt attention, muſt plainly perceive this is removing obſtructions, and aſſiſting nature in her operations.

I MUST here likewiſe obſerve an almoſt univerſal error in the ſowing theſe ſeeds, which is, that if the nurſeryman has them not as thick as a bed of Creſſes, he eſteems them an inſufficient crop. This, however, is a moſt barbarous and even diſhoneſt practice, and the bad effects of it have, more than any other circumſtance I know, retarded the ſucceſs of our plantations. The plants thus raiſed as thick as they can ſtand, are ſtarved and dwarfiſh, and, from want of air, ſo tender, as to be affected, and often to periſh, with the firſt hard weather; or if, from favour-

able circumſtances in the ſoil or ſituation of the place, they ſhould live, their ſhoots are poor and languid, their roots carroty and without fibres; in which ſtate they will long continue, if a ſucceeding hard winter does not quite deſtroy them. Many gentlemen who have purchaſed large quantities of firs ſo raiſed, imported from the north of Scotland, and ſold for leſs than half the price any man can raiſe good plants for, have paid dear for their intended frugality, and are now too ſenſible of the truth of what is here obſerved. Nor is this practice confined to the north of Scotland only; for, I am ſorry to ſay, it has defuſed itſelf over moſt parts of the kingdom, and at laſt reached the capital, where ſeveral people have ſtarted up and aſſumed the character of nurſerymen, unbred to, and unknowing in the meaneſt branch of gardening. Theſe gentlemen have adopted the ſyſtem of their northern brethren, and impoſed on the ignorant and unwary, by ſelling their ſuffocated traſh, which well they may, under the rate of good plants; whence they have injured the fair-dealing intelligent nurſeryman, whoſe heart diſclaims receiving money at ſo great an expence as deforming, in place of beautifying and inriching his country. It is hoped the nature of the ſubject will procure pardon for this digreſſion, which is far from being the effect of ill nature or envy, theſe invaders being of a ſpecies too contemptible to admit of either. Some of them have already paid for their preſumption, and it is hoped all of them will in due time, as, from the univerſal taſte of planting in this kingdom amongſt men of fortune and education, they will ſoon become judges of the difference between good and bad plants, and of courſe diſcourage the ignorant and diſhoneſt practices of quacks and impoſtors.

As the plants begin to appear above ground, if water is to be had at no great diſtance, and the weather is dry, without froſt, it will much promote their growth, to water them in the mornnings early once every four or five days for five or ſix weeks, when they will have got roots enough to continue growing vigorouſly the remaining part of the ſummer, and require no further labour than keeping them clear of weeds.

From the beginning to the middle of April following, tranſplant them from the ſeed-bed (cutting away a little of their downright roots) to other ſhady well-prepared borders, in rows fifteen inches aſunder and ſix or ſeven inches in the row, and give them three or four plentiful waterings at and ſoon after planting, if the weather require it. The ſucceeding October and March, point over the ground between the rows, which will encourage the ſpreading of their fibres, and let them remain here two years from their removal; at which time, from this culture, theſe plants will have ſuch abundance of roots, with bodies ſo thick and well-proportioned, that they will encounter all difficulties, and ſucceed in the worſt ſoils and coldeſt ſituations, much better than ſeedlings.

For the purpoſe of ſheltering ſuddenly plantations of finer trees, in the garden or wilderneſs, with large firs, theſe plants may again be removed to another nurſery, and planted in rows three feet aſunder and eighteen inches in the row, where, after ſtanding two years longer, and digging the ground as formerly, they will tranſplant with abſolute ſafety, and grow as freely as the younger plants, notwithſtanding the general prejudice againſt old Scots Firs, which has only a good foundation when they

have not been tranſplanted ſeaſonably, and otherways properly cultivated.

In removing theſe plants, either from the ſeed-bed or from one nurſery to another, while young, I muſt here adviſe a ſimple and eaſy precaution may never be omitted, which is, to have ſtanding by you a tub with water and earth, mix'd to ſuch a conſiſtence, as that a conſiderable quantity of it will adhere to the roots of the plants: The moment they are raiſed, let them be plunged in the tub as deep as they ſtood in the ground; and if they continue for ſeveral hours in this ſituation, it will be ſo much the better, as in that time they will imbibe a quantity of moiſture ſufficient to enable them to proceed in a growing ſtate, and reſiſt the drought till they have ſtruck root, when they will ſhift for themſelves. By attending to this practice, I have often ſucceeded in the removal of Firs in unfavourable ſeaſons; but where it was neglected, they have generally been cut off.

Tho' I have recommended the removal of the Scots Fir or Pine at a year old, yet I mean that ſhould be underſtood under certain reſtrictions, and only practiſed when the ſeeds are early ſown on good ſoil, as here directed, and when from a favourable ſeaſon they have become good well-grown plants; but if otherways, and theſe rules have not been obſerved, but the ground poor, the ſowing late and too thick, the plants will be ſmall, ſtunted, and unable to bear tranſplantation, ſo muſt of courſe remain another year; but even then, they will be much inferior to thoſe of a year old ſown ſeaſonably on good land and moderately thin. There is but one cure I know of for thick-ſown ſtunted plants, which is, going carefully over the beds when a

year old, and drawing them to proper diſtances. This perhaps a gentleman's gardener of reflection may be prevailed on to do, but many nurſerymen will, I am afraid, hardly ſubmit to making what they may think ſo great a ſacrifice, as throwing away a great number even of bad plants to procure a few good ones.

It has been an old diſpute, which ſtill ſubſiſts, whether there are more ſorts than one of the Scots Pine or Fir, and 'tis commonly aſſerted, that the difference we ſee in the wood when cut down and poliſhed, is owing only to the age of the tree, or the quality of the ſoil where it grew; but this aſſertion I am obliged to believe is not juſt, and proceeds from want of ſufficient obſervation, as I have ſeen many Fir trees cut down of equal age in the ſame ſpot, where ſome were white and ſpungy, others red and hard, which to me appears evident, that there are two diſtinct ſpecies of them; and indeed the difference of colour may eaſily be diſcovered by any one who walks through a new-prun'd plantation even of young trees. But having dwelt long enough on the Scots, it now becomes neceſſary to review ſome of the other and more beautiful kinds of Pines.

The ſecond, third, fourth, fifth, ſixth, ſeventh, and eighth ſorts, may all be propagated after the ſame manner. Thoſe have carroty deep roots with few fibres, which makes it indeſpenſibly neceſſary to remove them at one year old, when their roots are tender, and will more readily admit of being ſhortened than when older, very few of them ſucceeding at removal from the ſeed-bed above that age. This being the caſe, you muſt endeavour to make the plants as ſtrong as poſſible the firſt year. The ſeeds of theſe Pines do not riſe near ſo ſoon as thoſe of Scots,

and therefore they may with ſafety be ſown a fortnight earlier, that is, about the beginning of March. Thus ſowing them as early as the ſeaſon will permit, is the only certain method of procuring ſtrong plants. The ground then being prepared in a ſhady well-ſheltered ſituation, ſow the ſeeds in ſhallow drills made with your hands, a foot aſunder, and moderately thin in the drill. This indeed will employ much more ground than ſowing them in beds, but the far better quality of the plants ought to outweigh that conſideration; for, as moſt of the Pines come up with heavy tops and ſlender bodies, they are equally ſubject to be daſhed to pieces by the winter's winds and rains, as ſpewed out of the ground by the froſts; but by this method of ſowing, the earth can be drawn up to the plants with a ſmall hoe from time to time, ſo as to ſecure them from all the ſeverities of an ordinary ſeaſon.

When the buds begin to ſwell, next ſpring, raiſe the plants, cutting away a little from the extremity of their downright roots, and obſerve immediately to immerſe them in water and earth ſome hours, as directed for the Scots Pine; then plant them in a ſheltered ſhady border in drills cut out with the ſpade, at eighteen inches aſunder, and ſeven or eight inches in the drill; water them at planting, and continue to do ſo moderately as the weather requires, till you ſee them in a free growing ſtate; let them remain here two years, taking care to keep the ground clean and mellow in the ſurface, and pointing it over between the lines in autumn and ſpring.

The four laſt mentioned kinds are ſomewhat tenderer for two or three years, but will afterwards bear the greateſt ſeverity of

our winters very well: I would therefore adviſe them to be ſown in pots of fine rich looſe earth, protected from the ſun in ſummer, and all violent rains for the firſt year, but expoſed to the ſun during the winter and early ſpring months, under the protection of a frame without glaſſes, over which a mat may be thrown in ſevere weather, which muſt regularly be removed on its becoming temperate.

The following ſpring, as the buds begin to ſwell, plant them out either within an old frame without glaſſes as formerly, or in a bed arched over with hoops, to admit of being covered with mats in bad weather. In theſe beds or frames, place them in lines, a foot aſunder, and ſeven or eight inches in the lines; for five or ſix weeks after planting, let them be ſhaded from the mid-day ſun, till well eſtabliſhed, and in a free-growing ſtate, after which they will require no attention but in ſtormy weather, and that the firſt year only from their removal, as, in the month of May the ſecond year, the frames may be removed during the ſummer, and replaced in winter, though not covered, but in the event of a very ſevere ſtorm.

From theſe quarters all the Pines may be removed the ſucceeding ſpring, to where they are intended to remain for good, in large plantations; but for ſmaller deſigns, and an immediate ſhow, they may be tranſplanted with ſafety, to the height of ſix or ſeven feet, and ſome of them larger, if removed every ſecond year, and cultivated as here directed.

The firſt mentioned ſeven kinds are inhabitants of the mountains, and delight in a hard rocky ſoil; the four following ſorts

affect a deep and moiſt ground; and the New-England Pine, the moſt beautiful of all the tribe, loves a generous, deep, but not wet land, either naturally protected from violent ſtorms, or under the covert of ſome plantation, otherways, as it advances in height, it loſes its ſhining verdure, and becomes ragged and unſightly; but, interſperſed with other trees, in a ſoil it loves, and at a proper diſtance from them, it grows in this climate luxuriantly, and will ſoon become a noble plant. It is the moſt patient of all the Pines in tranſplanting either young or old, as its roots naturally tend leſs downward, and produces abundance of ſpreading fibres. I have removed them at twelve feet high with the greateſt ſucceſs, though even theſe had not been cultivated as they ought for that purpoſe.

The uſes of the timber of Scots Pine are univerſally known. All the other kinds are cloſer, harder, and more laſting: But that of the New-England is much more beautiful and valuable than any of the ſorts; it is of a darker colour, poliſhes very ſmooth, and has ſome reſemblance of the Cedar.

CHAPTER XXVI.

THE FIR TREE.

The SPECIES *are:*

1. The Norway, or Spruce FIR TREE.
2. The black American Spruce FIR TREE.
3. The white American Spruce FIR TREE.
4. The Silver FIR TREE.
5. The Balm of Gilead FIR TREE.
6. The Hemlock Spruce FIR TREE.

THOUGH all the writers on gardening I have read make no material diſtinction in the ſowing and future culture of the Fir from the Pine tree, yet, to my certain experience, a very different practice ought to be obſerved, particularly in ſome of the ſorts, and that for the moſt obvious reaſons. The Pine trees, the New-England only excepted, have downright roots with few fibres. Theſe roots, at tranſplanting, muſt neceſſarily be reduced, which, if done after they become hard and woody, will deſtroy the greateſt part of them. The roots of the Fir tree, on the contrary, ſpread near the ſurface, produce plenty of fibres, and do not grow near the ſize of the Pines in general the firſt year; from whence, I think, nature plainly points out to us the propriety of their remaining two years in the ſeminary with ſafety, and even advantage, which, to the Pines, from the circumſtances mentioned, muſt prove deſtructive: I ſhall therefore deſcribe the practice I have found moſt ſucceſsful.

About the middle of March, ſow the firſt, ſecond, and third ſorts on beds, in a ſhady well-ſheltered border, but much thinner than the Pines, as they are to remain two years.

The three remaining ſorts do not riſe by a fortnight at leaſt ſo ſoon as theſe do; and as they make very little progreſs the firſt year, all art and induſtry ſhould be uſed to promote their growth as much as poſſible, otherways many of them will be ſpew'd out of the ground, and the weaker plants entirely killed, if the following winter is ſevere. The beſt ſecurity, therefore, againſt all theſe common accidents being to ſow early, let them be ſown a a fortnight ſooner than the three preceding kinds, that is, by the beginning of March, the weather permitting. The ground for the ſeeds of theſe plants cannot be too rich a natural ſoil, or too finely prepared; it muſt alſo be looſe and dry, which, if not of that quality originally, muſt be rendered ſo, by mixing it with ſand, and elevating the beds ſix or ſeven inches above the alleys, to draw away the moiſture.

The Balm of Gilead, and Hemlock Spruce, are a little tenderer at firſt than the other ſorts, and will be much aided in their growth, if the beds are hoop'd over, and covered with mats for five or ſix weeks after the plants appear above ground, both in the middle of the day when the ſun is warm, and at night when the air is cold or froſty; and, during that time, they will require a gentle watering every ſecond evening when it does not rain.

At ſowing all the kinds of Firs, neglect not to clap over the beds with the back of a ſpade. This makes the ſurface ſmooth and level, prevents the ſeeds from being irregularly ſcattered in

drawing on the earth with the rake, and is in ſeveral other reſpects of advantage.

As theſe plants bring up the huſk of the ſeed on their tops, the ſmall birds, who are very fond of them, will deſtroy all or the greateſt part, if they are not guarded againſt. Every gardener has his own way of doing this; but the beſt method I know, is to procure a parcel of old fiſhing nets, and ſpread them over the beds, ſupported by cuttings of copſe-wood, or other prunings of trees, laid acroſs ſtakes; and thoſe nets are to be purchaſed at any ſea-port town, for a mere trifle.

In the autumn after ſowing, go over your beds, and, with your fingers, carefully pick off all moſſy hard-cruſted particles, replacing them with an equal quantity of the richeſt beſt prepared ſoil; over which ſift ſome chaff, or rather ſaw-duſt that has lain ſome time and loſt its firey quality. This will keep the plants warm, and prevent the ground from ſwelling with the froſt, which, if it does, is apt to ſpew them up: It will likeways be neceſſary, in hard froſt or violent rains, to throw a mat over the two laſt kinds, but regularly uncover them in mild weather.

In the ſucceeding ſpring, and during the months of May and June, the plants will ſtill be much invigorated by frequent waterings, and in autumn let the beds be treated as in the former; for though the ſeedlings are from this time till ſpring in a ſtate of reſt, and can, from no culture, be aſſiſted in their growth till then, yet the muſty parts contracted on the ſurface, will, by the winter rains, be waſhed into the earth, which it will contaminate, and communicate diſeaſes to the plants, from which they will ſlowly recover. This circumſtance, though in general little

attended to, is yet of the greateſt importance to all ſeedling trees.

FROM the ſeed-bed, at two years old, in the ſpring when their buds begin to ſwell, theſe plants may be removed, and treated as has been directed for the Pines of one year's growth; but as all the kinds of them will tranſplant, at a conſiderable ſize, with the greateſt ſucceſs, when properly managed, I ſhall add a few lines on that ſubject, as a nurſery of the fine kinds of Firs, eight or ten feet high, would be a very valuable acquiſition, either to a private gentleman, or a nurſeryman; and few men of fortune, I believe, would ſcruple beſtowing a little extraordinary expence to cover a naked field, ſhelter a new planted garden, or adorn a new-built houſe with ſo goodly ornaments.

THESE plants, being now four years old, muſt be tranſplanted to another ſpot of good land, and placed in rows two and a half feet aſunder and fourteen or ſixteen inches diſtant in the row; water them at planting, and continue it once a week, five or ſix times, when it does not rain, keeping the ground clear of weeds in ſummer, and mellow by autumn and ſpring digging, in which ſituation they may remain three years.

FROM thence remove them again in ſpring at the uſual time, ſhortening their ſtraggling roots moderately, and plant them in rows four feet aſunder and two feet in the row, to remain three years longer.

IF required larger, remove them again, and plant them at ſix feet aſunder every way, to remain two, but not above three years more; by which time, in good land, and under the culture here directed, the three firſt mentioned kinds will be from fourteen

to ſixteen, and the Silver Fir from ten to twelve feet high. Thus managed, theſe trees will riſe with ſuch abundant balls of earth about their roots, as will prevent their receiving the leaſt injury at removal, nor will their future growth be in the ſmalleſt degree retarded by it. Particular directions for their tranſplantation would here be unneceſſary, as the rules preſcribed for large Engliſh Elm, and other deciduous trees, will anſwer for them, and moſt others, with reſpect to making the pits, and preparing the ſoil: Only it may be neceſſary to obſerve, that theſe, and other large Evergreens, in general require more frequent tho' gentler waterings, at and ſoon after tranſplanting, than the deciduous kinds;—to which I muſt add, that they ought not to have a ſingle branch taken away at this time, but, the year before, ſhould be reduced to their deſired form, which is only pruning off their under-branches a foot or eighteen inches above ground; and, after having ſtood two years longer, they may be further reduced, by annually taking away a tire of branches, till their trunks are cleared the intended height, which I think (in woods for timber only excepted) ought never to be done above ten or twelve feet from the ſurface, their greateſt beauty conſiſting in the graceful wave of their luxuriant branches from the top to near the bottom.

The three firſt-mentioned Spruce Firs will grow tolerably well in dry, gravelly, or rocky ground, but much more affects that which is deep, where, though very coarſe, and barren in the production of vegetables, they will grow freely.

The Silver Fir, which I have ever thought the moſt magnificent tree of all the Evergreen tribe that our climate produces in full perfection, it is in vain to plant in hot, dry, or rocky

ſituations, where they commonly not only loſe their top-ſhoots, but their under-branches ſoon become ragged, and, in place of that lively ſhining verdure peculiar to them in a ſoil they affect, they become of a pale languid hue; nay I have known trees of them above twenty years planted out in ſuch ſoils, entirely deſtroyed by a hot dry ſummer. At the ſame time they are in other reſpects amongſt the leaſt delicate of any plants in the choice of their food, as the largeſt and moſt flouriſhing trees of them I have ever ſeen over this iſland, in general grow on ſour, heavy, obſtinate clay, of all different qualities and colours; and though for ten or twelve years they do not advance ſo faſt as ſeveral of the other Firs and Pines, yet in twenty they will outgrow them all, and continue that advantage till they arrive to their greateſt magnitude.

THESE trees, like the other more common ſorts intended for timber only, ſhould not, as they commonly are, be planted cloſe together in thickets, but require a free circulation of air, otherways their intermingled branches will deſtroy one another.

THE Balm of Gilead Fir, though it is deſcribed as growing to a large ſize in America, and is ranked in our catalogues with the talleſt trees, yet I never ſaw them in this country of any great magnitude. It requires a generous deep-feeding ſoil, and ſheltered ſituation, to which, from its ſingular beauty and elegance, it is juſtly intitled, and it claims our culture and care.

THE Hemlock Spruce Fir is a pretty plant, but delicate, and, to ſucceed well with us, muſt have a good ſoil, and warm ſituation: It will likeways be improved by tying its leading ſhoot, to a ſtake annually as it advances.

Though I have directed the ſpring as the moſt proper ſeaſon for planting Firs and Pines, which, for ſeedlings, and tender ſorts, it is,—yet I muſt beg the Reader's further indulgence a little, in recommending what will be found the greateſt improvement ever was practiſed on moſt of the Evergreen ſpecies, if generally attended to. The experiment is cheap and eaſy, and I want no more than the trial to have it approved by all the planters in Great Britain. It is no more, than, in place of the ſpring, to plant all the hardy kinds of them that have arrived to a foot in height and upwards in Auguſt, as ſoon as they have perfected their ſhoots. Many thouſands, for a ſucceſſion of years, have I planted at that ſeaſon, without once having failed in my moſt ſanguine expectations; but before that trial, in unkindly ſprings, and dry ſummers, I have loſt great numbers, though all poſſible care had been taken; and I dare ſay, every extenſive and ingenuous planter will acknowledge his caſe has been ſimilar to mine. Though experience is the only unerring guide in operations of Gardening, yet there appears good natural reaſons in favour of this ſeaſon: The ſhoots of the plants are now ripened,—the ground is ſtill warm, and pregnant with vegetation,—by working the earth, that vegetation is as it were artificially put in freſh and more vigorous motion,—rain at this time is ſeldom or never wanted;—all which circumſtances conjoined, muſt prove highly favourable to new-planted trees. From this happy temperature of the earth and ſeaſon, the trees ſtrike root immediately as if in a hot-bed, and have nothing to oppoſe them till the froſt comes on, before which they are ſufficiently eſtabliſhed, and ſtrengthened to reſiſt its power. To all theſe advantages, the expence of watering in the ſpring and ſummer months is ſaved, the winter rains having provided againſt the common danger of ſuffering from dry weather; and

laſtly, this is, properly ſpeaking, ſaving time, being a much more convenient ſeaſon of the year than the ſpring for an extenſive plantation, as then, from the great variety of operations to be done both in the gardens and fields, it is with difficulty they can all be duly attended to, and properly executed.

I NOW conclude this (I am afraid too tedious) diſcourſe on Firs, with obſerving, that I have often been ſurpriſed the Scots Pine or Fir ſhould be the only Evergreen indiſcriminately uſed to any great extent in every ſoil and ſituation, thought incapable of producing the better kinds of Foreſt-trees. I acknowledge they are applied with great propriety in mountainous, rocky, chalky, ſandy and gravelly places; but in hungry deep till, and clay, the Spruce Fir will much ſurpaſs them in growth. And this being a tree of much greater beauty, more valuable timber, and propagated with the ſame facility, Why do we not encourage it in ample plantations where the ſoil invites? as few plants would contribute more to our pleaſure and profit, in many extenſive, though now cold and gloomy, tracts of land. For Evergreen hedges in cold ſituations, to ſhelter gardens or other plantations, I know no plant on earth ſo proper as the Norway Spruce Fir: They are ſtrong fences, grow amazingly faſt, ſheep or cattle do not annoy them, and, by clipping them in moiſt weather, when they begin to ſhoot in the ſpring, thin at top, and gradually thicker to the bottom, they will continue many years beautiful and verdant.

ALL the kinds of Firs are injured by lopping the old wood, and therefore ought to be pruned when the branches are young and tender. The beſt ſeaſon for pruning them, is as early in autumn as the ſap is at reſt.

CHAPTER XXVII.

THE CEDAR TREE.

The SPECIES *are:*

1. The CEDAR of Libanus.
2. The red Virginian CEDAR.
3. The white-berried Virginian CEDAR.
4. The CEDAR of Bermudas.
5. The TREE, or Swediſh Juniper.

THE cones of the Cedar of Libanus were formerly brought to Britain from the Levant; but the Engliſh trees have ſince produced abundance, and thoſe of a better quality than the foreign. The late Mr Philip Miller, (whoſe memory I ſhall ever revere as my worthy friend, and moſt indulgent communicative maſter), who, from his naturally acute and ingenious obſervations, as well as having four of the fineſt plants in England under his direction, now growing in the Phyſic-garden of Chelſea, muſt have had acceſs to know the nature of this tree better than moſt men,—juſtly obſerves, That they are more apt both to produce and ripen their cones in hard than mild winters; and of the Engliſh producing more and better ſeeds, I have certain demonſtration, having, from his bounty, annually received a preſent of a conſiderable quantity of his cones for above twenty years, which never failed, though thoſe from abroad, purchaſed at a high price, often did.

THESE noble and magnificent trees at Chelſea having been for ſeveral years under my almoſt daily view, I could not help con-

ceiving a high regard for this plant; and from the favourable opportunity I had of procuring its cones, (then not ſo plenty as now), I have raiſed many more of them than any man ever did in Scotland, and was the firſt who made them frequent in this part of the kingdom; from which circumſtances, and making different experiments on their culture, I imagine I am able to direct it properly; nor indeed does that require any great penetration, as, after three or four years growth, they are very hardy.

THE way to get out the ſeeds, is by ſplitting the cones thro' the centre with a ſharp piece of iron length-ways, and picking them out with your fingers, which may eaſily be done, after expoſing them for ſome hours on the hearth before a warm fire. If the cones are two years old, they will emit their ſeeds more readily than thoſe lately gathered, and the ſeeds be equally good.

THE beſt ſoil to raiſe theſe plants on, is rich old cow-paſture earth, which, if not naturally of a light quality, mix with a fourth or fifth part of ſea-ſand, or that taken from the ſides of rivulets, well blended together for ſome months before it is uſed. I have mentioned this tree as very hardy at three or four years old, neither is it delicate from the beginning; but at the ſame time, it is abſolutely neceſſary to give them abundant nouriſhment at firſt, in order to make fair and vigorous plants; for if they once become dwarfiſh, ſtunted, or loſe their leading ſhoot, no art will afterwards reſtore them to a good figure: Therefore, the raiſing a number of plants, which any tolerable gardener may eaſily do, is not the only thing required; it is raiſing them of a healthful comely figure, and this cannot be done without ſome ſkill and attention. In order to effect it, obſerve the following rules:

HAVING prepared the ſoil as before mentioned, in a ſheltered ſituation expoſed only to the morning ſun, place an old hot-bed frame thereon, and put in it the depth of ſeven or eight inches of this mould, in which ſow the ſeeds the beginning of March, in ſhallow drills made with your finger, a foot or fourteen inches aſunder. About a fortnight after ſowing, the weather being dry, give them a very gentle ſprinkling of water every ſecond evening while it continues ſo. In about ſix weeks the plants will appear above ground, when, if the nights are froſty, which is often the caſe at this ſeaſon, let a mat be thrown over them in the evening, and taken off next morning or forenoon, when the ſun diſpels the froſt. After this time, the weather being mild and dry, the waterings muſt be regularly though gently continued; and now it will be ſafeſt to do it in the mornings till the froſt is over, after which they will receive more benefit from it in the evenings.

THESE Cedars come up, and continue the firſt year, with remarkably tall and thin bodies, and with heavy tops, inclining to hang downwards: They have downright roots, with few fibres; and their roots penetrate leſs into the earth at firſt than any plant I know, in ſo much that I have ſeen great numbers of them laid flat, and beat entirely out of the ground with the rains, even in the ſummer months. To remedy this common misfortune, no method is equal to drawing up the mould about their ſtems, at ſundry times as they advance in growth, which will not only preſerve, but much invigorate the plants. This being attended to, they will require no further care till next ſeaſon, but covering the frame with a mat in violent rains or ſevere froſt, never omitting to uncover them in mild weather.

THE following ſpring, prepare another ſpot in the ſame manner as for the ſeed, but let the compoſt ſoil be twelve or fourteen inches deep, having cut off the points of their downright roots with a very ſharp knife, which, being tender, would otherways tear their fibres; immerſe them in ſuch palp as has been directed for the Pines and Firs, about half an hour, and plant them in beds eighteen inches by a foot aſunder. If theſe beds are hooped acroſs, and a mat thrown over them during the heat of the day, till their roots have ſtruck, and their leaves begin to expand, it will much accelerate their growth; and during any ſevere ſtorm the ſucceeding winter, this ought ſtill to be repeated. It will likeways be neceſſary, the firſt ſummer, to draw a little earth to the ſtems of the plants, as mentioned for the ſeedlings, and to give them frequent gentle waterings during the growing ſeaſon. By next ſpring the Cedars will be out of danger, the hoops and mats will be of no further uſe, and the plants require only common culture in all time coming.

THESE plants being now three years old, will be hardy enough for removal to a common nurſery, in any ordinary ſoil or ſituation, where, about the beginning of April, they ſhould be planted in lines two and a half feet aſunder, and fourteen or ſixteen inches diſtant in the line. At tranſplanting, continue to reduce the downright roots, and ſhorten the ſmaller fibres moderately, which will occaſion their producing many more new roots, ſo as afterwards to riſe with bulks of earth cloſely adhering to them;—it will be neceſſary to ſteep them in palp as formerly, to water them at planting, and to continue it every fourth or fifth evening for ſix weeks, the weather being dry. Here let them continue two years, when they may be removed to the places in which they are meant to remain; or, if deſired larger for

future deſigns, they may again be tranſplanted to another quarter, and placed in rows five feet aſunder and three feet in the row, to continue three years longer; and they will afterwards ſucceed equally well as the youngeſt plant, by ſeaſonably repeated waterings.

The above culture I recommend as beſt for private perſons, who have them to remove only from their nurſery to the adjoining fields; but for nurſerymen, who often ſend them to a great diſtance, I would adviſe a parcel of them to be put in pots nine inches diameter, at three years old, where, after keeping them three years longer, they may be ſhaken out of theſe pots with their whole bulks of earth entire, and, being wrapt in a piece of mat, may with ſafety be tranſported to the remoteſt corners of the iſland, and will keep ſeveral months out of the ground without ſuffering any injury.

When the plants begin to grow freely, the leading ſhoot always inclines to one ſide: To remedy this, you muſt thruſt in a ſtake by the ſide of each plant, and tye the leader cloſe to it, till you have got them to a conſiderable height, otherways their branches, which naturally expand a great way, will prevent their growing tall.

To whatever height you intend clearing the trunks of thoſe Cedars, (which ought never to be great, as much of their beauty conſiſts in being cloathed with their noble verdant boughs to near the ſurface), let the branches be cut off when young and tender, as no tree I know reſents lopping their old wood ſo much. Mr Miller, in the Gardener's Dictionary, mentions two

of his four trees having been ſo uſed, to admit the rays of the ſun into a green-houſe, whereby they were ſo much checked, as, in above forty years growth, to be little more than half the ſize of the other two: And I myſelf have experienced a circumſtance entirely ſimilar; for, having planted two Cedars about twenty-four years ſince, then three feet high, which for ſixteen years grew amazingly faſt, and promiſed to be noble plants, an ignorant gardener unadviſedly cut off ſeveral of their oldeſt under-branches, ſince which they have advanced little or nothing in height, have loſt their leading ſhoots, and become ragged and buſhy.

THOUGH theſe trees, when young, require all the culture and ſhelter here directed to make them handſome and vigorous, yet, when five or ſix years old, no plant will better endure our moſt ſevere ſeaſons, or grow in more forbidding, poor, and hungry ſoil, the largeſt trees of them now known in the world being in the coldeſt and moſt expoſed places, covered great part of the year with ſnow; from whence, it cannot be doubted, but that they might become a great ornament, and valuable improvement, if generally planted in Great-Britain.

MANY pages have been wrote by learned men on the virtues of the wood of this tree, as, that it is proof againſt all putrefaction of animal bodies,—that it yields an oil famous for preſerving books and writings,—that the great Seſoſtris King of Egypt built a veſſel of Cedar, two hundred and eighty cubits long,—that in the temple of Apollo Utica, was found freſh timber near two thouſand years old,—and that the ſtatue of the Goddeſs in the Epheſian temple was of this material, as was moſt of the timber-work of that glorious ſtructure, *&c. &c.*

THE red and white Virginian Cedars are eaſily propagated, by ſowing their berries in the ſpring on beds of good mellow light ſoil, expoſed only to the morning ſun, and otherways ſheltered by trees, hedges, or walls. Theſe ſeeds will remain a year in the ground before they appear; during which time, the beds muſt be kept clean, and the ſurface ſweet and looſe: It will likeways be neceſſary, in extreme drought, to give them now and then a gentle ſprinkling of water, which will keep the berries in vigour, as otherways I have known many of them periſh, and the remainder come up weak, late, and irregular in the ſpring, after a very dry ſummer. As the plants make ſmall progreſs the firſt year, they may remain two years in the ſeed-bed; they muſt, both the ſummer ſeaſons, be frequently refreſhed with water, and let the ſurface of the beds in autumn be dreſſed as has been directed for other ſeedlings.

THE ſpring following, remove them to another well-ſheltered ſpot, of the ſame quality as for the ſeed, and plant them in lines, eighteen inches aſunder, and nine or ten inches diſtant in the line; give them the ſame kind of culture formerly directed for Evergreens of that age, and let them remain two years.

FROM thence remove them to another quarter of the nurſery, in any ordinary ſoil and ſituation, cutting away the extreme parts of their roots, with any of the crowded or ill-placed branches, and plant them in lines, three and a half feet aſunder, and two feet in the line; let them be watered at planting, and frequently after it in dry weather, till paſt mid-ſummer, keeping the ground entirely clean; and here they ought to remain three years, when they will be of a proper ſize to be planted out for good.

I WOULD likeways adviſe nurſerymen to pot ſome of theſe plants, as directed for the Cedar of Libanus, to tranſport to any great diſtance; they are alſo very proper to mix with myrtles, annual flowers, and other potted plants, to adorn the borders of the flower-garden or court.

THE Tree, or Swediſh Juniper, may be treated in all reſpects as the red and white Cedars.

THE Bermudas Cedar is more delicate and ſlower of growth, when young, than the ſorts mentioned; it will therefore be an improvement to ſow their berries in pots, to keep them in the ſhade during the ſummer months, and under a frame the following winter. In the ſpring, when the ſeeds begin to vegetate, plunge the pots into a moderate hot-bed till the month of July, from whence they will advance more in one ſeaſon, than two in their natural ſtate, and make better plants.

THE ſucceeding ſpring, plant each of them in halfpenny pots, and again plunge them in a hot-bed till July, when, in mild weather, they may by degrees be inured to the open air, and next ſpring put into penny pots, where they ſhould remain two years, when they ought, once more, either to be ſhifted into two-penny pots, or planted in a well-ſheltered place of the nurſery for three years, by which time they will reſiſt our ſevereſt winters very well. Though this proceſs may to ſome appear troubleſome, it is only ſo in a very trifling degree to a good gardener, who has proper conveniencies for executing his buſineſs; and the Bermudas Cedar, being a plant of great beauty and elegance, is well worth beſtowing a little extraordinary pains in bringing it ſoon to perfection.

THE two Virginian kinds, and Swediſh Juniper, will grow by cuttings, from which I have raiſed many handſome plants: This may either be done the beginning of April or end of Auguſt, the latter of which ſeaſons I have found moſt ſucceſsful. Being then provided with branches of one or two years growth, cut or tear them aſunder at the joints, leaving a knob of the old wood at them, and clear off the leaves or ſmall twigs as far as the cuttings are to be buried in the ground, which, if they will admit of it, may be about ſix inches; plant them in lines eighteen inches diſtant, in a ſhady border of rich looſe earth, and refreſh them with water as the ſeaſon may require. The following ſummer, let the ground between the earth be kept looſe and mellow, by frequent ſtirring with a trowel; water them every third or fourth evening in dry weather, and the ſecond ſpring they will be ſufficiently rooted to tranſplant to the quarters of the nurſery, there to be treated as the ſeedlings.

THE Bermudas Cedar will likeways grow by cuttings, tho' not ſo freely in the open ground; but ten or twelve of them put in a penny pot, and plunged into a hot-bed of tanners bark, will root liberally in one ſummer; and if taken out of thoſe pots the ſucceeding ſpring, put in ſeparate ones of the ſame ſize, and again plunged in the hot-bed another ſummer, they will be larger plants than the ſeedlings at four years old, and may afterwards be treated as has been directed for them.

I HAVE often heard gardeners, of more than common ingenuity, boaſt they have raiſed abundance of good plants from cuttings of the Cedar of Libanus. This knowledge I have been dull or unlucky enough not yet to arrive at. I have tried every

method for this purpoſe I could deviſe, but never could procure nor ever ſaw a healthful ſhapely plant of them ſo raiſed: I can make them live, but in plants as well as animals ſomething more than bare exiſtence is ſurely wanted.

THERE are various other ſorts of Cedars, but the rules here laid down for the culture of thoſe mentioned are ſufficient to lead to the whole, by only obſerving, that ſuch ſeeds or plants as are brought from warm and temperate regions, require more aid and protection for ſome time, than others from more inhoſpitable climes.

IN the culture of all the Cedars, as well as that of Libanus, let it be an invariable rule, to prune and reduce them to their proper form when the branches are young, from whence their wounds will immediately heal; but which if neglected till old and woody, ſo great an effuſion of ſap will flow from them in hot weather, as to render the trees weak and unhealthy, if it does not deſtroy them.

THERE is perhaps no ſpecies of trees ſucceeds in a greater variety of ſoils, or in more oppoſite climates, than the Cedars do: They grow in all extremes, in the moiſt Barbadoes, the hot Bermudas, and the cold New-England; they thrive in the bogs of America, and the mountains of Aſia. We have now many goodly thriving trees of them in Britain, and, from the almoſt incredible value of the wood, joined to the extraordinary beauty of the plants, we have every encouragement to make more extenſive and general plantations of them.

Chapter XXVIII.

The CYPRESS TREE.

The Species *are:*

1. The common upright Cypress Tree.
2. The male-ſpreading Cypress Tree.
3. The Virginian or deciduous Cypress Tree.
4. The American Cypress Tree, commonly called the White Cedar.

THE firſt, ſecond, and third ſorts, are propagated by ſowing their ſeeds in ſheltered ſhady borders of fine rich looſe earth, about the middle of March, which in five or ſix weeks will appear above ground, when they muſt be regularly watered in the evenings of mild dry weather, every third or fourth night, and this continued, giving them little at a time, till the middle of Auguſt; and if in the beginning of winter ſome ſaw-duſt is ſifted over them, as directed for the Firs, it will much contribute to their preſervation in the event of ſevere weather.

The following ſpring, theſe plants, which, well managed, will be ſix or ſeven inches high, muſt be removed to the ſame kind of ſoil and ſituation they were in the ſeminary, their downright roots ſhortened, and planted in lines eighteen inches aſunder and eight or nine inches in the line, where, as their roots naturally incline more to run deep than ſpread on the ſurface, and as they

are plants of free growth, they ſhould remain no more than one year, when they ought to be upwards of a foot high.

THEREFORE, the ſucceeding ſpring, plant them in the common nurſery, in lines three feet aſunder and eighteen inches in the line; water them at planting, and repeat it once every week, the weather being dry, till they have ſtruck root and begin to grow freely, when they will require no further trouble than keeping them clean, and pointing over the ground between the lines in autumn and ſpring.

HAVING ſtood in this nurſery two years, they may be removed to the places where they are deſigned to remain, which may be fully more proper at this age than when older. Theſe trees loſe their greateſt beauty when much pruned; but their tops being very heavy, and branches flexible, the winds take much impreſſion on them, in ſo much that I have known quantities blown entirely out of the ground that were moved about ſix feet high two years before: It is therefore better to give them a firm eſtabliſhment in the earth while the plants are young, and when there will not be the ſame neceſſity of taking away ſo many of their boughs as they would otherways require.

THE method mentioned is the eaſieſt and quickeſt way to raiſe large quantities of theſe plants; but as it is no uncommon thing for a hard winter to deſtroy whole beds of them, at one, and even two years old, it becomes neceſſary in ſome meaſure to provide againſt ſuch misfortunes, by ſowing part of your ſeeds in pots.

For this purpoſe, being provided with ſoil of the quality formerly mentioned, ſow them at the ſame time in your pots, and cover them about a quarter of an inch deep; place them in a ſheltered ſituation, ſo as to receive only the morning ſun till ten or eleven o'clock; keep them regularly though moderately watered, and in October remove the pots under a frame, ſo as they may be protected in ſevere weather.

The ſucceeding ſpring, ſhake them out of theſe pots, and plant them in others of fourteen or ſixteen inches diameter, each of which will contain from ſixteen to twenty plants: Let them be placed in the ſhade till in a free growing ſtate, in winter removed under a frame, and afterwards treated as directed for the others of the ſame age.

The American Cypreſs is ſomewhat tenderer and ſlower of growth than the fore-mentioned ſorts, and they continue a year in the ground before they appear; I would therefore adviſe all theſe to be ſown in pots, and treated the firſt ſeaſon as the other ſorts: But the ſucceeding ſpring, when the ſeeds begin to vegetate, having cleared the ſurface of mouldy particles, and replaced that by ſifting on freſh earth in proportion, plunge the pots into a moderate hot-bed till June, and afterwards gradually inure them to the open air, placing them ſo as to be protected during the hardſhips of winter.

The following ſpring, put ſixteen or twenty of theſe in other pots, in the ſame manner as the former kinds; only plunge them again in a hot-bed for about two months, and protect them during the ſucceeding winter as before. In theſe pots they may

remain another year, without any more trouble than keeping them clean, and refreſhing them with frequent waterings; after which they may be removed to the nurſery, and planted in lines three feet aſunder and eighteen inches in the line, where they ſhould remain three years, and then be tranſplanted to the places where they are meant to continue for good.

THESE trees require a particular addreſs in pruning them; for if they are trim'd cloſe up to any conſiderable height, their bodies will be ſo ſlender as to bear no proportion to their weighty tops: The beſt method therefore of ordering them, ſo as both to preſerve their beauty and accelerate their growth, is, to cut away from the top to near the bottom all ill-placed forked branches, (of which this plant produces many), reſerving only, at proper diſtances, ſuch as are vigorous, and radiate directly from the body. This is an eaſy operation, and will require very little repetition, the tree not being diſpoſed to put out young branches from the old ſtem. By pruning them judiciouſly in this manner, their thick branchy trunks will counterpoiſe their heavy heads, and render them able to reſiſt the winds.

THE firſt and ſecond ſorts affect a dry, ſandy, or gravelly ſoil; the third, in Virginia, is generally found in moiſt ſwampy places, and ſometimes in conſtant ſtanding water; but the American ſort I have always found ſucceed beſt in a good deep-feeding earth, neither too wet nor too dry.

THE Cypreſs has not only a fine effect when mix'd with (tho' not crowded near) other trees, but is of moſt plants the propereſt to place round or near buildings, where their upright pyramidal

growth has a very pictureſque appearance without obſtructing the view, and their dark-green leaves make a moſt agreeable contraſt with the white of the building. The Italian villas owe no ſmall part of their beauty to the proper diſtribution of many Cypreſs trees, adjoining to the temples and other ornamental works of architecture in their gardens, as we ſee by the land-ſcapes of thoſe villas.

LIKE that of the Cedar, many are the encomiums beſtowed, both by antient and modern writers, on the virtues of this tree, and the excellency of its wood, a few of which only ſhall here be mentioned. It is recommended for the improvement of the air, and a ſpecific for the lungs, as ſending forth great quantities of aromatic and balſamic emiſſions; for which reaſon, the antient phyſicians of the Eaſtern countries uſed to ſend their patients troubled with weak lungs to the iſland of Candia, at that time abounding with theſe trees, where, from the effects of the air alone, few failed of a perfect cure. The vaſt armadas which Alexander the Great ſet out from Babylon, conſiſted only of Cypreſs, as did the doors of St Peter's church at Rome, which laſted from Conſtantine the Great to Pope Eugenius the IVth's time, eleven hundred years, and being then changed for gates of braſs, were found entirely freſh. It was in coffins of Cypreſs the Athenians uſed to bury their heroes, and the Mummy cheſts brought from Egypt are moſtly of this material. That laſting bridge, built by Semiramis over the Euphrates was of it, and Plato choſe to write his laws on it, in preference to braſs itſelf, for its diuturnity. In ſhort, it is by all writers allowed to be a moſt valuable timber, is proof againſt all putrefaction, and the very chips or cones of it, being burnt, extinguiſh moths, and expel gnats and flies.

CHAPTER XXIX.

THE *ARBOR VITÆ*, OR, TREE OF LIFE.

The SPECIES *are:*

1. The common ARBOR VITÆ.
2. The Chineſe ARBOR VITÆ.
3. The ARBOR VITÆ, with ſtrip'd leaves.

THE firſt of theſe may be propagated either by ſeeds, layers, or cuttings; but as the ſeeds lye a year in the ground before they appear, which makes that culture tedious, and as the layers and cuttings make very good plants, that method in general is rather to be choſen.

IF you increaſe them by layers, let that operation be performed in the month of March, watering them, more or leſs as the weather requires, during the ſpring and ſummer months, which will much aſſiſt their rooting abundantly, and by the following ſpring they will be fit to take off.

IF they are to be raiſed from cuttings, the culture directed for the red and white Virginian Cedars will beſt agree with them, and therefore need not to be repeated.

THE plants having got ſufficient roots, tranſplant them to a border ſcreen'd from the mid-day ſun, in lines two and a half

feet aſunder and one foot in the line; water them at planting, and continue to do ſo once in five or ſix days during the ſpring and ſummer months, the weather being dry; keep the ground clean and looſe about them, and point it over in autumn and ſpring; in which ſituation let them remain two years.

FROM thence remove them to any ordinary quarter of the nurſery; cut away a little of the extremities of their roots, with ſuch as are ill-placed and croſs each other; plant them in lines three and a half feet aſunder and two feet diſtant in the line, ordering them as in their former quarters, and let them continue here three years, when they will be of proper ſize to tranſplant where they are to remain: But if large plants are wanted at a future period, to make an immediate appearance in ſingle trees, in groves, or in the wilderneſs, they may again be removed to another nurſery, and planted about five feet aſunder every way, to ſtand two, three, or four years longer, this tree being as patient of removal when large as any Evergreen, which I ſpeak from experience, having tranſplanted them at ten and twelve feet high with all the ſucceſs that could be deſired.

THE Chineſe *Arbor Vitæ*, though afterwards a hardy plant, is, when young, a little more delicate and ſlower of growth than the other, neither does it root well by layers in leſs than two years, or take freely by cuttings in the open ground; and therefore it may be adviſeable to ſow ſome of their ſeeds, in doing of which, the culture directed for the American Cypreſs, is in all reſpects the beſt I can preſcribe for them.

IT may likeways be proper to raiſe part of them by layers, which, having ſtood two years, will be rooted. In the begin-

ning of April, let them be planted in penny pots, and then, to forward their growth, plunge them into a moderate hot-bed of tanners bark till the beginning of Auguſt; after which, inure them by degrees to the open air, and place them under ſome protection during the ſucceeding winter. The following ſpring, take as much earth out of the pots as can be done without injuring the roots, replacing it with freſh rich mould; and in theſe pots let them remain a ſecond year, watering them in dry weather every third or fourth day, when they may be taken out with bulks of earth cloſely adhering to them, and afterwards treated, in reſpect of ſoil, as the common kind; but, to preſerve their beautiful verdure unſullied in a ſevere winter, I would adviſe them to be planted (though not near, yet) under the protection of other trees.

This tree may alſo be propagated by cuttings, putting ten or twelve of them in a penny-pot, plunging them into the bark-bed as for the layers, and afterwards giving them the ſame management.

The ſort with ſtrip'd leaves may be increaſed by layers or cuttings as the common kind, but muſt be planted on thin dry land, to preſerve their variegation ſtrong.

For the pruning theſe trees, I can preſcribe no better method than has already been mentioned for the Cypreſs, to which they have a near reſemblance, and with which they will perfectly agree.

The common kind will grow in very indifferent ground, but moſt affects a deep ſound earth, where they will ſoon make great

progreſs; and though in winter their leaves are of a dull tanny colour, yet, in the ſpring and ſummer months, they are a very chearful green, and the plants have a moſt agreeable negligent appearance.

THE great value of the wood for bowls, boxes, cups, mortars, peſtles, and various works of the turner and cabinet-maker, are generally known, and being a tree that bears our ſevereſt winters, and ſoon arrives to a middling ſtature, it juſtly claims a place, and the more frequent uſe of it would become an improvement in our extenſive plantations.

THE Chineſe ſort, from the obſervations I have made, will not, I believe, grow to ſo great a magnitude in this climate as the former; but being amongſt the moſt beautiful of all the Evergreens, it well deſerves encouragement in the garden and wilderneſs.

CHAPTER XXX.

THE *ILEX*, or EVERGREEN OAK TREE.

The SPECIES *are:*

1. The Olive-leav'd EVERGREEN OAK.
2. The narrow-leav'd EVERGREEN OAK, with ſerrated leaves.
3. The Holly-leav'd EVERGREEN OAK.
4. The round ſmooth-leav'd EVERGREEN OAK.

THERE are ſeveral other varieties of this plant; but theſe being only ſeminal, are not worthy of being enumerated.

I KNOW no tree more difficult to tranſplant than the Ilex, as the roots of it, when not interrupted, run as ſtraight down into the earth as a carrot, and with as few fibres; ſo that for hedges, or large plantations, I would adviſe their acorns to be put in the places where they are deſigned to remain.

IF for hedges, let a border be well trenched, levelled, and raked the beginning of March, and make a ſhallow drill with a ſmall hoe, placing the acorns in it at the diſtance of three or four inches, and covering them about two inches deep, keeping the ſurface mellow and clear of weeds. Theſe plants make very little progreſs the firſt ſeaſon, and will not then bear being cut under ground, but will make large amends ever after, by luxu-

riant growths in any tolerable ſoil they affect. After ſtanding two years, carefully draw out, ſo as not to injure what remains, the plants that are too thick, leaving them from a foot to fifteen or ſixteen inches diſtant. In the following ſpring, the hedges will require ſome correction: At this time go over them, firſt pruning off any ſpreading or croſs-hanging branches near their tops, and afterwards let their ſides be clip'd to the bottom with ſhears; but this muſt be cautiouſly done at firſt, and not too cloſe to their bodies; after which, by digging the borders for a few years, and ſhearing the plants annually, obſerving always to keep them light and thin in the tops, there is no plant I know will ſo ſoon make warm and lofty hedges, to the height of forty or fifty feet, or ſo much improve a cold climate, and promote the growth of other trees.

If you intend large plantations of theſe trees, either by themſelves, or mix'd with others, cultivate the ground well by labour, and put four or five acorns in patches together, at ſuch diſtances as you intend the plants ſhould ſtand. The ſecond April after, draw all but the moſt thriving one; and the third, you may begin pruning off any ill-placed branches, and part of the others where too thick.

The plants of two years old you have drawn, having ſhortened their roots, and plunged them in palp for ſome hours, may be committed to a ſhady border in the nurſery, and laid in lines two feet aſunder, where, in a kindly ſeaſon, and by giving them frequent gentle waterings, ſome of them will ſucceed, and in this ſituation they may remain three years.

I HAVE been not a little diverted, to hear writers on this plant ſagely adviſing to raiſe their ſeedlings with bulks of earth. It will indeed require much care to do a thing nature has in a great meaſure denied, as bulks of earth cannot poſſibly adhere to plants deſtitute of fibres, which thoſe, when young, without the aſſiſtance of art, almoſt totally are; to culture, therefore, we muſt have recourſe to raiſe them with bulks.

FOR ſmaller plantations, and to be provided in plants that will remove with ſafety, ſow theſe acorns in drills two and a half feet aſunder and three or four inches in the drill, on good generous ſoil; let their growth here be promoted all you can by ſeaſonable watering, and keeping the ground clean, ſweet, and mellow: The ſecond ſpring after, with a ſpade, clear away the earth from one ſide of the line of plants, about five inches deep, and, with a ſharp knife, at that depth cut the roots acroſs, at the ſame time clap your left hand on the plants, to prevent their being in the leaſt diſturbed, and immediately replace the earth that was thrown up, preſſing it gently down with your hands. This practice ought to be repeated for three or four years, making them annually thinner as they increaſe in ſize; and, from its being well performed, I have had great ſucceſs in removing numbers of thoſe trees.

YOU may likeways raiſe the Ilex, by ſowing their acorns in pots, where, after remaining three or four years, they may be ſhaken out with the whole bulk of earth about them, and planted with abſolute ſafety where they are to remain: But this is an expenſive and tedious method, as ſuch will make little progreſs compared with thoſe in the open ground; beſides, the roots of

theſe plants, raiſed from ſeeds in pots, and that muſt remain ſo long in them, being all compreſſed in one cluſter, from which they cannot afterwards be diſintangled, will never produce ſuch luxuriant trees as theſe that from time to time have had their roots properly pruned, and room to extend themſelves in the open ground. Notwithſtanding, from what I have ſaid of this practice with the Ilex, I would not by any means be underſtood to reflect on potting many young and tender plants, whoſe roots are not ſo obſtinate, but may be increaſed, and, by proper pruning, diſpoſed in pots as well as otherways; ſo that in many caſes, for particular trees, it is of much importance in their culture.

THESE trees, being eſtabliſhed in the ground, are (unlike many of the Evergreen tribes) very patient of cutting, ſo that, from three or four years old, they ought to be regularly pruned, and brought to a handſome form, which they will eaſily receive. I had lately in my property five of the largeſt Evergreen Oaks in Scotland, which ſtanding near a ſouth wall, when about twenty years old, began to darken it, and tho' I would ſooner have forfeited the advantage of twenty times as much walling, than hurt theſe trees, I made the experiment of pruning one of them that I had on purpoſe let remain almoſt in the ſtate of nature. This experiment I tried with great ſeverity, by cutting away all the large branches from the trunk, and ſeveral of the principal arms where the tree divided; from whence I could diſcover no material check in its future growth, but the wounds healed ſuddenly.

AFTER the plants drawn from the lines that were cut below ground have ſtood three or four years in the nurſery, and the

untranſplanted remainder as long, remove them to their proper ſtations for good, as, conſidering their being ſo very hard in the root, and unwilling to puſh out freſh ones, any further proceſs in the nurſery way will be unneceſſary. Let them be plentifully watered at removal, and that regularly attended to once a week in dry weather, during the warm ſummer months.

THOUGH the attentive culture of this tree in ſuch a climate as ours, when diſpoſed in proper ſituations, muſt be productive of many advantages, yet I would not adviſe their being planted near the houſe or gardens, as in April and May they caſt their old leaves, which occaſions a prodigious litter, and are in that chearful ſeaſon ragged and gloomy.

THE land they chiefly affect, from the relation of reputable writers, is a hazelly loam. This is a ſpecies of earth few plants will diſagree with, but is very far from being univerſal; and luckily the Ilex will ſucceed in a variety of leſs deſireable ſoils: Therefore I muſt affirm, from experience, that ſuch as are meant for tranſplantation, though they ought to be cultivated in a generous mould, which will ſooneſt procure them ſufficient roots to bear removal, yet theſe roots being procured, (which will not fail if the directions here given are attended to), they will afterwards grow freely in very ordinary land, in that particularly which is deep, though very coarſe and ſtubborn (but not wet) moſt vigorouſly. They are indeed a little delicate at firſt, but ſoon become amongſt the hardieſt trees; and theſe I have mentioned lately in my poſſeſſion, ſtand on a lean hungry gravel, that had been long and conſtantly employed in raiſing nurſery crops, a circumſtance unfavourable to their vigorous growth.

If the land you intend for large plantations, or to incloſe with hedges of them, is poor or ſtiff, I would adviſe, after digging or trenching it well according to its quality, to lay ſome rich mould on the poor, and ſome looſe on the ſtiff ſurface of the borders for hedges, or other ſpots allotted for the timber-trees, the beginning of winter, and point it ſlightly in before ſowing in April.

The wood of the Evergreen Oak makes excellent ſtocks for tools, mallet-heads, axle-trees, wedges, paliſadoes,—and ſupplies the greateſt part of Spain, and the ſouth of France, with the beſt and moſt laſting charcoal yet known.

CHAPTER XXXI.

THE CORK TREE.

The SPECIES *are:*

1. The broad-leaved Evergreen CORK TREE.
2. The narrow-leav'd CORK TREE, with ſmooth edges.

THE beſt Engliſh writer on this ſubject, has directed theſe plants to be propagated in all reſpects like the Evergreen Oak. About London indeed, which, from a variety of concurring circumſtances, is a very different climate from any other part of Great-Britain, that practice may anſwer; but in the remote counties of England, and in Scotland, to my certain experience, it will not ſucceed, ſo as ſoon, if ever, to make thriving plants; for they make very little progreſs the firſt ſummer, and the following winter generally ſpews them out of the ground, or otherways deſtroys them: But in the manner I ſhall here direct, I have raiſed many vigorous plants of them.

TRY the quality of your acorns as has been directed for the common Oak, that, from planting no unſound ſeed, there may be no blanks in the crop. In the beginning of March, prepare a ſhallow box, or boxes, according to the number of plants you intend to raiſe; let the bottom of the boxes be bored with holes half an inch diameter, at four or five inches aſunder, and covered with oyſter-ſhells or broken tyles; put five inches deep of

fine rich light mould in them, on which place your acorns about four inches aſunder, and cover them with two inches more of the ſame kind of mould; place theſe boxes on a moderate hot-bed, of which tanners bark is the beſt; and in ten or twelve days after, when you find the earth beginning to dry, give them a very gentle ſprinkling of water, which repeat every fourth or fifth day. In a month after ſowing, the plants will begin to appear, when the quantity of water muſt be increaſed, how much, or how frequently, the condition of the earth will beſt direct you. In this hot-bed the boxes may remain till the beginning of July, from whence they may be taken, and placed in a ſhady ſheltered ſituation during the remaining ſummer months; but obſerve, before removing them from the hot-bed, that they be gradually inured to bear the open air, by taking off the glaſſes in mild or moiſt weather, when the ſun is not ſcorching, and late in the evenings, or all night, when the ſeaſon is quite temperate and ſerene. On the approach of winter, let the ſurface of the boxes be cleared of all muſty particles with your fingers, and replaced with a greater proportion of the fineſt rich mould; after which place them under frames till the ſucceeding ſpring, and only cover them with the glaſſes in violent rains or hard froſts.

From the middle of April to the beginning of May, as the weather ſooner or later becomes favourable, let theſe boxes be removed to a well-ſheltered, but ſhady place in the nurſery, and placed on ſtones or logs of wood ſome inches above the ſurface of the ground, which not being obſerved, is apt to occaſion ſuch a ſtagnation and corruption in the mould, as frequently to deſtroy the whole plants, or at beſt to ſtunt them beyond recovery. During the ſummer months, let them be regularly refreſhed with

water as the ſeaſon requires; and in the autumn, (though it may often not be neceſſary), I ſhould chuſe to make ſure work, by removing them under the protection of a frame, which may be covered in the event of a very rigid winter.

In the beginning of April following, the plants being now two years old, muſt be taken out of the boxes, when, from the interruption the ſtraight roots have met with in not running downwards, by carefully undermining them with a trowel, they may generally be raiſed with earth adhering to them. This being done without wounding the ſmalleſt fibre, put them in penny pots filled with rich looſe mould; plunge the pots into a moderate hot-bed only for ſix weeks or two months, till they have puſhed out freſh fibres, and are in a briſk growing ſtate. When this is the caſe, harden them gradually, and remove the pots to a north border during the remaining part of the ſummer. From this time theſe plants will require no more than common culture, and, having ſtood two years in the pots, may be ſhaken out of them with their whole bulks, and either planted where deſigned to remain for good, or in the nurſery two or three years more, for future deſigns, from whence they will remove with eaſe and ſafety.

Though this proceſs, to a lazy gardener, may ſeem troubleſome, yet it is not very expenſive; and I am certain I have not directed the leaſt ſuperfluous labour for theſe plants in this country.

The Cork Tree, in the places of its native growth, is deſcribed by many travellers to grow in bleak mountainous ſituations,

and poor, rocky, ſteril ſoils, with their roots running above the ſurface; but theſe ſoils and ſituations muſt have ſome happy animating qualities belonging to them, unfelt in our northern regions, where we muſt make them much more familiar to us than they yet are, before we pretend to accommodate them with ſuch lodgings; and therefore, to have them grow freely, and to any conſiderable magnitude, we muſt give them a good ſolid generous ſoil, and a ſituation defended, either by nature or art, from the cold eaſterly and northerly winds.

THE uſes of cork, which is the bark of the tree, need no explanation. That of its body is hard, laſting, and beautiful, and, like the Ilex, makes excellent charcoal.

CHAPTER XXXII.

THE HOLLY TREE.

The SPECIES *are:*

1. The common HOLLY, with red berries.
2. The ſmooth ſhining-leav'd HOLLY, with red berries.
3. The yellow-berried green HOLLY.
4. The white-berried green HOLLY.
5. The green Hedge-hog HOLLY.
6. The yellow-blotch'd Hedge-hog HOLLY.
7. The gold-edg'd Hedge-hog HOLLY.
8. The ſilver-edg'd Hedge-hog HOLLY.
9. The yellow-blotch'd HOLLY.
10. The white-blotch'd HOLLY.
11. Broderick's HOLLY.
12. Eales's HOLLY.
13. Sir Thomas Franklin's HOLLY.
14. Hertfordſhire white HOLLY.
15. Bridgman's HOLLY.
16. Longſtaff's beſt HOLLY.
17. Bradley's beſt HOLLY.
18. Wiſe's beſt HOLLY.
19. The Britiſh HOLLY.
20. Bagſhot HOLLY.
21. Glory of the Eaſt HOLLY.
22. Glory of the Weſt HOLLY.

23. Aſlet's HOLLY.
24. The Union HOLLY.
25. Fine Phyllis HOLLY.
26. Painted Lady HOLLY.
27. Fuller's cream HOLLY.
28. Milk-maid HOLLY.
29. Capel's motled HOLLY.
30. Patridge's HOLLY.
31. Maſon's copper-colour'd HOLLY.
32. Box-leav'd HOLLY.
33. Whitmell's HOLLY.

HOLLY BERRIES are uſually gathered at the ſame time with Haws, early in autumn, ſoon after turning red, but they are by no means ripe at this time, and ſhould hang on the trees till December at ſooneſt; or, were it not for the birds, who greedily devour them, I would not adviſe pulling them till February or March, during which time they will improve in maturity.

THE common method of raiſing theſe plants, is by ſowing their berries whole, either as ſoon as they come from the trees, or the following ſpring; but this is a very ill practice.

THESE berries contain four ſeeds in each, from whence, by ſowing them whole, if the ſeeds were good, there muſt neceſſarily be four plants interwoven in a cluſter together; and it is great odds, if, in dividing them when raiſed, two or three of the four are not torn aſunder, and the remainder much injured.

THEREFORE, to prevent the ill conſequences ariſing from that practice, as ſoon as your berries are gathered, throw them into a tub with water, and rub them between your hands till you have diveſted the ſeeds of their thick glutinous covering, which is ſoon executed with little trouble. This being done, the good ſeeds will ſink to the bottom, when you muſt pour off the water, with all the pulpy ſubſtance that floats, and ſpread the ſeeds on a cloth in a dry airy place, rubbing them between your hands often, and giving them a freſh cloth daily till the ſeeds are ſeparated and quite dry. If this is done in autumn or winter, mix the ſeeds with ſand, and keep them from wet till ſpring; but if they have not been gathered till ſpring, let them be immediately ſown.

ANY time the weather is moſt ſeaſonable in March or April, will be a good time for ſowing them, which muſt be done as regularly as poſſible, and much thinner than is uſually practiſed, on a ſpot of well-prepared rich looſe mould, in beds three and a half feet broad, with alleys of eighteen inches between them, covered three quarters of an inch thick; and as theſe ſeeds will not vegetate till the ſucceeding ſpring, let the ground be kept clean, ſweet and mellow, till autumn, when the ſurface of the beds muſt be looſened with a ſhort-teeth'd rake, and a little fine freſh mould thrown over them, which may again be raked off in the ſpring, before the ſeeds are in any ſenſible motion.

THE following year, in the beginning of April, draw out a conſiderable number of your Hollies, then one year old, and leave the remainder ſo thin as they may receive all the influences of air, ſun, and rain; let theſe drawn be planted in a ſhady border,

in lines eighteen inches aſunder and five or ſix inches in the line, giving them frequent moderate waterings, and pointing over the ground in autumn and ſpring. The reaſon of allowing ſo large a ſpace to theſe plants, which are, and will be for two years very ſmall, is to give room to dig the ground between the lines, as the beſt means both to promote the growth of the plants, and to encourage the ſide-roots to ſpread, ſo as to riſe with bulks. In this ſituation they may remain three years.

The plants remaining in the ſeed-bed, being two years old, ought to be removed; and having cautiouſly ſhortened their downright, and ſmoothed the extremities of the ſpreading roots, plant, and otherways cultivate them in the ſame manner as the former, only in this nurſery they ought to continue but two years.

In tolerable ſoil, and a protected ſituation, theſe Hollies may be planted for hedges where deſigned to remain, cutting them over by the ground, and watering them; but in poor unſhelter-ed land, they will ſucceed much better, by giving them more ſtrength from age and further culture.

Therefore, to do this effectually, remove theſe plants to another quarter of well-prepared freſh earth, and plant them in lines three feet aſunder and eighteen inches in the line. At this time let them have a plentiful watering, keeping the ground as formerly, and here let them continue untouched for two years. The third ſpring, throw out a trench of earth from one ſide of the plants, and with a ſpade made very ſharp, cut clean over all the downright roots at ten inches or a foot below the ſurface, and

likeways ſhorten all ſtraggling ones that extend far from the ſides; then replace the earth, and dig it well about them. Having ſtood here another ſeaſon, cut them over by the ground, and the following, which will be the fourth year, they may be removed where you intend, without the loſs of one in a thouſand.

The beginning of April, having prepared the borders where you deſign planting your hedges, let the Hollies be carefully raiſed with bulks of earth about their roots, which will naturally adhere to them if the culture directed has been obſerved. There will be no occaſion for much pruning of the roots at this time, only with a ſharp knife cut off and ſmooth any that have been broken or bruiſed with the ſpade in raiſing them; keep them as ſhort time as may be out of the ground, and plant them at eighteen inches diſtance, the ſame depth they formerly ſtood; give them a plentiful watering, which ought to be repeated once in ten or twelve days, for three or four times, if the weather is dry. The plants having been cut over the year before, will have made ſhoots from a foot to eighteen inches high; theſe you may reduce to an equal height, about ſix or eight inches above the former year's cutting; and thus you have a hedge formed, that requires no further trouble than keeping the roots of the plants clean for a few years, and annually clipping them, which, in an ordinary ſoil, will, in ten years, defeat the attempts of the ſtrongeſt bull to injure it.

I HAVE likeways planted the Holly and Thorn mix'd in hedges with moſt deſireable ſucceſs, every third or fourth plant being a Holly. The Thorns, for four or five years, will advance

faſteſt, after which the Hollies will annually gain ground, and at laſt totally extirpate the others, whence, by planting both, you will ſooneſt have an appearance, and afterwards, by an agreeable metamorphoſis, have an entire Holly hedge.

HAVING mentioned the Holly only for hedges, of which it makes the ſtrongeſt, warmeſt, moſt laſting, and beautiful, for outward fences, of any plant this climate produces; yet I am far from meaning to confine it to that formal purpoſe alone, as I know none will more adorn, or be otherways more uſeful, not only in the garden and wilderneſs, but the more extended woods and foreſts. For theſe purpoſes, at the laſt removal directed for the hedge plants, let ſuch a proportion as your deſigns require be ſelected from them, of the talleſt and cleaneſt ſhoots, of which cut away all but the leading one, and plant them in another nurſery of freſh earth, in lines five feet aſunder and two and a half in the line; cultivate the ground about them by digging and dreſſing it, and annually prune the trees to their proper form; in which ſituation they may continue ſeven or eight years, raiſing part of them from time to time as your plantations require.

THE general neglect of cultivating this beautiful plant, both in the hedges and woods, is moſt amazing, when its many uſes and good qualities are conſidered; and I can account for this diſregard in no way but one, which is, not attending to its proper culture, from whence many of them uſually fail at planting out, and what remains makes little progreſs for a long time. Their common treatment is removing them from the ſeed-bed (where they are almoſt univerſally too thick) at two, three, and

ſometimes four years old, and dibbling them, (ſtill immoderately thick), where they often continue four, five, or ſix years, if not demanded while they are worth the having. By this means their roots are bad, their bodies tall and ſlender, and their tops heavy, ſo that the gentleſt breeze of wind will ſhake them to their foundation, from which every fibre they puſh out is immediately deſtroyed, and the plants muſt of courſe periſh: But by following the practice here directed, the winds make no impreſſion on them, nor is there in nature a hardier tree, one that roots better, is more patient of cutting both in the root and body, or that may be planted with more undoubted ſucceſs, from one to twelve or fifteen feet high.

The Holly tree, in a ſoil it affects, will grow upwards of fifty feet high, and even to a conſiderable ſize, on as great a variety of ſoils as any plant I know. It refuſes not the pooreſt, hot, ſandy, gravelly, and rocky ground, nor the coldeſt ſpoutty clay and till; and its beautiful ſhining leaves, almoſt covered with rich ſcarlet fruit, which the ſevereſt winter does not diſcolour, makes it in a particular manner, at that ſeaſon, a moſt grateful and deſirable ſight.

Tho' I have juſtly reported this as one of the hardieſt plants, when it has been properly cultivated, and once got good footing, yet where hedges of it are planted on extremely poor and hungry land, particularly what is ſtiff, if a ſmall mixture of rich ſandy or gravelly ſoil (but by no means dung) were mixed in the borders, it would much promote their rooting at firſt, which being once put in a free-growing ſtate, they will afterwards require no further aſſiſtance from art.

I MUST not here omit taking notice of a very wrong, though prevailing cuſtom, which is, clipping theſe hedges the beginning of winter. This has various ill effects, as it not only robs them of their beauty and verdure in that gloomy ſeaſon, by cutting away the freſh tender ſhoots, and mangling the leaves, but likeways expoſes the naked hearts of the plants to all the rigour of the ſtorms, unprotected as they are of their natural cloathing. Let this, therefore, never be performed later in the ſeaſon than July, after which the young ſhoots will again ſhelter the inward parts before the ſevere weather comes on.

ANY deſcription I am capable of giving in praiſe of Holly hedges, will fall infinitely ſhort of the impreſſions every man of taſte muſt conceive, who ſhall ſee old fences of them that have been properly trained. Sorry I am, I cannot gratify the public in many examples of this kind; but happily there is one in Scotland that will juſtify the higheſt encomiums of the ableſt writer on that ſubject, which is to be ſeen at Tynningham, in the county of Eaſt-Lothian, the ſeat of the Right Honourable the Earl of Hadinton, and to a view of them I appeal, as the cleareſt evidence of the incomparable beauty, laſting ſtrength, and magnificence of Holly hedges: But how much nobler an appearance this plant will make ſtanding unconſtrained by ſhears, detached and at freedom in the woods, loaded as they annually are with berries, (which clipping prevents), is eaſy to imagine. Theſe hedges were planted by the late Earl of Hadinton, the greateſt, moſt knowing, and moſt ſucceſsful planter of his time, and who, to all appearance, from a very poor and unpromiſing ſoil, expoſed to, and cloſe upon the great German ocean, has raiſed very extenſive and flouriſhing plantations of the moſt valuable Foreſt-trees. What I have ſaid on the

hedges at Tynningham will not, I hope, be deemed a digreſſion from my ſubject; tho' probably it may, that I would here humbly recommend to the preſent Earl, the proprietor, that, as an example to this and future ages, he would pleaſe allow, at leaſt ſome part of theſe hedges (which at preſent I think are not lofty in proportion to their thickneſs and ſtrength) to run up to twenty-five or thirty feet in height; cut thinner and thinner as they approach the top, which in a few years would make them the moſt glorious ſight of the kind that can be conceived, and this may be done without in the ſmalleſt degree impairing their ſtrength.

THE great variety of variegated Hollies for the wilderneſs or Evergreen garden, are likeways all highly worthy our attention, not clip'd or reduced to any exact form, but, after having been properly pruned, to increaſe their ſtature, growing in their natural luxuriancy of branches and fruit. The variegation of trees in general, no doubt proceeds from ſome weakneſs or diſeaſe; they are commonly dwarfiſh, and when planted in ſtrong land, loſe much of their beauty, and often turn plain: But in the Holly it is quite otherways; they grow to a large ſize, and the moſt generous ſoil does not in the leaſt diminiſh the mixture of their colours, but makes them more brilliant; ſo that the various kinds of them, diſpoſed with good taſte, afford, at all ſeaſons of the year, a gay and refreſhing entertainment.

THERE have been many directions given, with much ſolemnity and aſſurance of ſucceſs, for variegating Hollies from their ſeeds, all which that I ever read or heard of, with many experiments of my own, I have tried ineffectually; from whence I can ſafely conclude, they are all quackiſh impoſitions, and that, to make

good plants, they can only be increaſed by budding or grafting them on the plain green kind, in both which ways they will readily ſucceed; but their variegation by other means, is a ſport in nature no art has as yet been able to imitate.

I HAVE raiſed the different kinds of Hollies from layers, and even from cuttings: But I recommend neither; they are not only extremely tedious methods, but I never was able to make good plants from them.

THE timber of the Holly is exceeding hard, and of all ſtrong wood the whiteſt: It is uſeful for many laſting purpoſes; the mill-wright, turner, and engraver, prefer it to any other; it makes the beſt handles and ſtocks for tools, flails, bowls, bolts for doors, nay they even make hinges of it inſtead of iron, and it is ſo heavy, that, like iron, it ſinks in water.

CHAPTER XXXIII.

THE YEW TREE.

The SPECIES *are:*

1. The common YEW TREE.
2. The YEW TREE, with a broader and more ſhining leaf.
3. The YEW TREE, with ſtrip'd leaves.

THE firſt and ſecond ſorts are indiſcrimniately propagated together: They may be raiſed by ſowing their berries in beds three and a half feet broad, with alleys eighteen inches between them, on any ſpot of well-prepared freſh ground. If this is done the beginning of winter, as ſoon as the berries are ripe, having firſt diveſted them of the pulp in which they are incloſed, ſome of them will appear the following ſpring; but as theſe will be much the ſmaller part, to have a plentiful and regular crop all appear at the ſame time, I rather adviſe the ſeeds to be mixed with earth till ſpring, and managed in the ſeed-bed for two years, and three more in the nurſery, as has been directed for the Holly.

THE Yew may likeways be propagated by cuttings of one or two years growth, planted in a ſhady border the beginning of April or end of Auguſt; let them be laid in lines eighteen inches aſunder, covered five inches deep, and watered at planting; rub off the leaves as far as the cuttings are buried, and, in two years, they

will be well rooted, and fit for removal. The branches being torn aſunder at the joints, are better than plain cuttings.

THE plants from ſeeds being five, and the cuttings two years old, (though ſtill ſmall), remove them to another nurſery, ſhortening their downright roots, and lay them in lines two feet aſunder and nine or ten inches in the line, to remain three years.

FROM thence remove them again, and plant them in lines four feet aſunder and two feet in the line, giving them a plentiful watering, which ſhould be repeated, if the weather is dry, once a week, three or four times; and here they may continue, if the land is rich, four, but if poor, five or ſix years, during which time they may be pruned, ſo as to elevate them for trees, or clip'd into the form of hedges, ſuitable to your intentions. Let digging between theſe plants, at leaſt in the ſpring, never be omitted, as nothing will ſo much contribute, not only to increaſe their growth, but multiply their roots.

IF deſired larger, you may once more remove them to another quarter, and plant them at eight feet diſtance by ſix, continuing the ſame culture as before; from whence you may remove them, any time required, within ſeven or eight years.

No plant is more patient of being tranſplanted old than the Yew; it naturally produces great quantities of ſmall roots, to which the earth adheres ſo cloſely, that, with plentiful waterings, you may at once form compleat hedges of ſeven or eight feet high, that will not in the ſmalleſt manner be retarded in their growth by removal, but have the ſame freſhneſs and verdure the firſt ſeaſon they ever had.

THERE is not in nature a hardy plant ſo tonſile and obedient to the ſhears as this, or that makes ſo cloſe and warm a defence againſt the cold piercing winds, (the Holly only excepted, which making a great deal of litter in the ſpring, is not ſo proper for the inward diviſions of the garden), and therefore none comparable for making ſmall incloſures in the kitchen ground or nurſery, to protect and forward vegetable crops, or young and delicate trees and ſhrubs. Of what mighty advantage ſuch fences would be to men of fortune beginning their improvements, may eaſily be imagined: What pity then is it, and how blameable are nurſerymen whoſe circumſtances will admit, that they do not afford theſe aids, either for the public good, or their own private intereſt!

WITH all theſe advantages, I muſt acknowledge the Yew a very unchearful plant; and the old practice of planting great numbers of them, cut in no leſs various than ridiculous figures, in the courts and fronts of houſes, made them doubly mournful, which no doubt has increaſed the diſregard for ſome time ſhown them: But for the purpoſes mentioned, they cannot be too much encouraged; neither do I think they ought to be entirely baniſhed the wilderneſs or foreſt, where a few of them in their natural form, interſperſed with others, will appear with a reverend tho' gloomy magnificence, and are the fineſt foil imaginable to the reſt of the plantation, which, contraſted with them, will appear with additional chearfulneſs and luſtre.

I HAVE formerly mentioned the ill conſequences of clipping Holly hedges in autumn. This ought to be yet more particularly attended to in the Yew, which will ſuffer more by that practice, in ſo much that I have known, in ſevere winters, whole hedges of them become quite brown, and ſo weakened, that no-

thing but cutting them close to the trunk will again restore their thickness and verdure.

This tree, when shooting in spring, or loaded with berries in autumn, is noxious to cattle, which therefore, at these seasons, are to be kept from approaching them; but our species is not the true Taxus, or Yew of the Ancients, to which they ascribed so many deadly qualities. Mr Evelyn, in his Silva, mentions a tree of it growing in his time in the Medical Garden at Pisa in Tuscany, of so baneful a nature, that the gardeners could not clip it for above half an hour at a time, from their heads aching excessively. The leaves of this tree are described to be more like the Fir than our Yew, and this account of it is given by Doctor Belluceus, President of these gardens. I acknowledge the emissions of our Yew, when clip'd, to be no regale, but luckily it has not the malignant effects of the Tuscan.

This tree grows to a large size, is hardy in respect of cold, and will succeed in the most barren and mountainous situations, where the greatest storms will make no impression on it. Since the use of bows has been laid aside, the wood is in less estimation than formerly; but it still gives a high price for the cabinet-maker. Posts of it put in moist ground, will continue sound for ages, and for axle-trees no wood is so strong and lasting; to which I shall only add one very material quality more, though not related by any writer so far as I know, and which is, that the wooden parts of a bed made of Yew, will most certainly not be approached by bugs. This is a truth, confirmed to me by the experience of trees I had cut down and used myself in that way.

CHAPTER XXXIV.

THE *LAUREL*, OR CHERRY BAY TREE.

The SPECIES *are:*

1. The common LAUREL.
2. The white-ſtrip'd LAUREL.
3. The yellow-ſtrip'd LAUREL.
4. The Portugal LAUREL.

THE common Laurel is to be propagated either from ſeeds or cuttings; but as thoſe from ſeeds make the moſt uniform ſtately trees, and ſooneſt produce their fruit, ſo, where they are required of large ſtature, I would adviſe that method which I ſhall firſt deſcribe:

IN the beginning of winter, ſoon after the berries are ripe, ſow them in a ſhady border of well-prepared freſh looſe mould, in beds three and a half feet broad, with alleys of eighteen inches between them, and cover them an inch and a half, or two inches deep. In the beginning of the following March, before their vegetation, rake off as much of their covering as may be done without diſturbing the berries, and replace it with freſh earth to the depth of about three quarters of an inch. About the middle of April, when the ſeeds will be in a growing ſtate, the weather being dry, and not froſty, refreſh them with frequent

gentle waterings in the morning; and continue this, more or leſs, during the ſummer months, as the ſeaſon ſhall require, changing the morning to evening's watering as ſoon as the danger of the froſts are over.

The ſucceeding ſpring, the ground being good, and the former ſummer having been favourable, as ſoon as their buds begin to ſwell, remove them from the ſeminary to the nurſery, and lay them with the ſpade in lines two feet aſunder and nine or ten inches in the line, the ſame depth they formerly ſtood; water them at planting, and if you repeat it three or four times at the diſtance of ten or twelve days, the ſeaſon being dry, it will much forward their growth: Let the ground between the rows be pointed over in autumn and ſpring, and cut away any croſs lateral branches during their abode here, which ought to be two years only. If theſe berries have been ſown in poor land, the plants of courſe will have made ſmall progreſs; in that event, and that they are not too thick, they may remain in the ſeed-bed two years.

To raiſe them from cuttings, plant them in a ſhady border of moiſt (not wet) earth, in lines two feet aſunder. The beginning of April, or middle of Auguſt, let the cuttings be a foot or fourteen inches long, one half of which ſhould be buried in the ground; let the whole leaves be rub'd off, which otherways generally wither and hang on great part of that ſeaſon, and from thence taint the plant. Here they may remain till the ſecond April following, giving them the ſame culture as the ſeedlings.

WITH reſpect to cuttings of theſe, and all other trees, I muſt here take notice of one circumſtance I have never read in any author, or ever ſeen attended to in practice, but which is of the higheſt importance in the culture of every plant raiſed from them; and that is, indiſcriminately taking all branches of a proper age and ſize, without conſidering the manner and diſpoſition of their growth: But nothing is more certain, than that a clean perpendicular ſhoot will produce a ſtraight handſome plant, an ill-formed bruſhy one continue its original likeneſs, and thoſe that ſpread and hang over in a horizontal way, will ever after continue to grow in that direction. I have planted perhaps as great a number of cuttings, and of as many various kinds, as any man of my age has done; and after having conſider'd what I thought was the order of nature, I determined to try this experiment, and, for a ſucceſſion of years, planted the three different kinds mentioned in ſeparate lines, when, after many years growth, the diſtinction was as perceptible in the trees, as in the branches hanging on their mothers; ſo that what the poet ſays of education——"Juſt as the twig is bent, the trees inclin'd." may here be applied, and is at leaſt as viſible in trees as men. This leads me to obſerve, that both authors and gardeners in general make diſtinction, and give ſeedling-plants of all kinds a great preference to cuttings. That many plants are better being raiſed from ſeeds than propagated in any other manner, I know experimentally to be true; but that ſeveral kinds, which root freely, are little, if any thing inferior, when the cuttings are properly choſen, I alſo know; and the general obſervation made to their diſadvantage, is owing to overlooking their quality at cutting them. Is it not ſtrange then, that we have not been univerſally warned to attend to a circumſtance ſo ſeemingly conſiſtent with reaſon and nature? But I return to the further culture of the plants.

The ſeedlings and cuttings may now be treated in the ſame manner, and removed to another nurſery, where, having ſhortened and cut away all ill-placed roots that croſs each other, and likewiſe pruned off ſuperfluous branches, carefully preſerving and encouraging the principal leading ſhoot, plant them in lines four feet aſunder and two feet diſtant in the line; take care of cultivating the ground as formerly, and prune them annually in ſuch a manner as will moſt elevate them in the pyramidal form: In this nurſery they may continue three, or not exceeding four years. I have ſpoken hitherto only with regard to ſuch as are intended for tall ſtandard trees; but here let it be obſerved, that ſuch as are meant for covering of walls, forming hedges, or other ſuch purpoſes, may either be applied in theſe ways from the former nurſery, or trained here ſo as at once to anſwer your future deſigns. This tree is commonly dwarfed and diſfigured by letting it grow rough too long, after which they are not to be redreſſed or brought to a proper figure, being much injured by cutting their old wood.

For making large plantations, theſe trees will now be of a competent ſize; but if a reſerve is wanted for diſtant deſigns, remove them to another ſpot, and plant them in the quincunx order, at ſix feet aſunder every way, obſerving the former culture; where, after ſtanding two years, they may be removed with ſafety five or ſix years longer.

The two ſorts with ſtrip'd leaves may alſo be increaſed by cuttings; but their variegation being very faint, in a luxuriant ſoil they will ſoon turn quite plain, and ought therefore to be planted in a poor, hungry, dry ſand or gravel. In order to blend their colours better than they naturally are, make them more

glaring, and of longer continuance, remove them annually in poor land for five or ſix years, budding a richly-variegated leaf on the green, or rather a variegated ſtock, which will much brighten, and alſo longer preſerve their colours, than if raiſed from cuttings.

THE Portugal Laurel will not riſe to half the magnitude of the others, nor is it ſo eaſily reared in the pyramidal form, but is a beautiful and elegant plant, of a very chearful ſhining verdure. It may be propagated either by ſeeds, layers, or cuttings, as the former, but, when young, are ſomewhat more delicate, and will be improved by a higher culture, better ſoil, and more ſheltered ſituation for four or five years, after which 'tis abundantly hardy.

THE beauty of the common Laurel is hardly known amongſt us, having formerly been mangled on walls and in hedges, or clip'd to buſhes with ſhears, which, from the largeneſs of its leaves, is of moſt plants the leaſt proper to uſe in that manner: It will grow to the height of between forty and fifty feet, and ſucceed in very poor barren ſoil. Of all the Evergreens familiar to this climate, I have ever eſteemed it amongſt the moſt graceful: It has all the beauty of the Orange tree without its fruit; and I cannot conceive a richer appearance in nature, than a number of lofty Laurels, that have been properly trained, planted near a houſe, either in ſingle trees, in groves, or interſperſed with other Evergreens in the wilderneſs way.

IT unites perfectly well, by grafting or budding it on the common black Cherry, and, from that, is conſiderably increaſed in magnitude, and rendered yet more hardy.

CHAPTER XXXV.

THE BAY TREE.

The SPECIES *are:*

1. The common BAY TREE, with male flowers.
2. The common fruit-bearing BAY TREE.
3. The broad-leav'd berry-bearing BAY TREE.
4. The gold-ſtrip'd BAY TREE.

THERE are ſeveral other ſpecies of the Bay tree, but being tenderer plants, commonly potted and kept in the green-houſe during winter, they are foreign to the deſign of this Treatiſe.

THE three firſt mentioned ſorts may either be propagated from ſeeds or layers, and will make good plants in either way. Their berries are commonly ripe the end of January, or beginning of February, when they ought to be gathered and preſerved in dry ſand till the beginning of March. The weather then being favourable, or as ſoon after as it becomes ſo, prepare a ſhady border of rich, looſe, undung'd ſoil, made ſmooth and fine with the rake, and well protected by hedges from the north and eaſt winds; here drop the berries in lines fifteen inches aſunder and about four inches in the line, ſifting over them an inch thick of the fineſt and richeſt mould you have. As ſoon as you perceive the plants begin to heave up the earth, refreſh them

frequently, but moderately, with water, in the mornings when cold, but the evenings of mild weather, and continue to do ſo all the ſummer months; clear the ground of all muſty particles in autumn and ſpring as directed for other ſeedlings, and let them remain here two years, watering the ſecond ſummer (though more plentifully) with the ſame attention as the firſt, it being of the utmoſt conſequence to promote the vigorous growth of this plant in its early ſtages, which, being then ſtarved from want of proper ſoil and culture, will become hide-bound, and hardly ever after make a ſtraight handſome tree.

Such as you intend to increaſe by layers, may be laid down in March, or Auguſt, the latter of which is much the beſt ſeaſon, as theſe done in March will be but indifferently rooted by the ſucceeding ſpring; but the others will be prepared by the earth to root vigorouſly early next ſeaſon, and by the ſecond ſpring make ſtrong healthy plants.

The Bay will alſo grow by cuttings, the young ſhoots being torn aſunder at the joints, and planted in a ſhady border; but by this method, in the open ground, their advance will be very ſmall, and require ſtanding four years at leaſt before removal, from whence they grow thick and bruſhy, nor ever make ſo handſome plants as either the ſeedling or layers; but I have raiſed thouſands of them in frames to the greateſt advantage, and with much facility, as follows: In the beginning of April, prepare a moderate hot-bed of tanners bark, and cover it eight inches deep with ſuch ſoil as directed for the ſeedlings. In this plant the cuttings five inches deep, and eight or nine inches

aſunder, rubbing off all their leaves; let them have a gentle watering every evening while the bed continues warm, which may be diſcontinued gradually as that warmth decreaſes, and cover the glaſſes with mats during the heat of the day; when the bark has loſt its ſtrength, and the cuttings have made young ſhoots, let them receive all mild gentle ſhowers, and the evening dews. About the beginning of Auguſt, the glaſſes may be taken off the frames, and replaced again when the weather begins to be froſty, but kept open every mild day. In the beginning of April following, or as ſoon after as the weather becomes temperate, remove both the glaſſes and frames; continue frequent and plentiful waterings during the ſummer months as the weather may require, and the ſucceeding April you will have ſtrong well-rooted plants, fit for removal. From this practice, I have raiſed clean-bodied Bays three feet high in two years, which unaſſiſted nature will not effect in four.

The plants now raiſed in theſe three different ways, may all be treated in the ſame manner, and removed to the nurſery; when, having cut away their ſuperfluous roots and branches, attentively encouraging the leading ſhoot, plant them in a well-ſheltered quarter of light mould, in lines three and a half feet aſunder and eighteen inches in the line: In this nurſery give them all poſſible culture, by digging the ground in autumn and ſpring, and keeping it clean, looſe, and mellow in ſummer, ſo as to increaſe their roots, and prune them annually in April to a pyramidal form. Here let them continue three, but not exceeding four years, when they may be removed to the places where

they are deſigned to remain for good; and tho' theſe trees may be removed at greater ages, yet I have found from experience, that this is the moſt proper time in order to raiſe them to their greateſt altitude.

THE gold-ſtrip'd Bay is of much humbler growth, and is tenderer than the ſorts before-named. It is commonly kept in pots, and houſed in winter with hardy green-houſe plants, tho' I have preſerved it in the open ground, for many years running, under the protection of other hardier Evergreens; but in ſevere winters it has been tarniſhed, ſometimes loſt its leaves, and even the young and tender branches have been deſtroyed, yet the ſucceeding ſummer repaired theſe misfortunes. It is a very ſtrong rich variegation, and ought to be in all good collections of Evergreens. The beſt method of increaſing this, is by budding it on any of the plain kinds.

THE Bay tree delights moſt on a warm, dry, ſandy, or gravelly ſoil, where it will grow to the height of between thirty and forty feet; but to preſerve its fine verdure, it ſhould be planted in ſituations defended from the deſtructive north and eaſt winds, to which if much expoſed, it will ſometimes ſuffer in a very ſevere winter, but generally recovers in ſummer, even after appearing quite dead. This plant ſhould not have a branch taken from it but in the ſpring of the year, as unſkilful, untimely, and late cutting it, has deſtroyed great numbers that otherways would have defied the ſevereſt winters, many examples of which I have ſeen.

The ſhade and flavour of the Bay has in all ages been eſteemed ſalubrious to human bodies; and its aromatic emiſſions were in the greateſt reputation with the antient phyſicians, for clearing the air, and reſiſting contagion, beſides, for their virtue againſt lightning: And we read, that the Emperor Tiberius, who was much afraid when that happened, uſed to creep under his bed to avoid it, and ſhade his head with its boughs. Many other phyſical virtues of its leaves, berries, *&c.* are aſcribed to it; but a relation of them is none of my preſent buſineſs; only, as a plant of elegance and beauty, and that yields a moſt refreſhing and healthful perfume a great way around it, I think it cannot be too much encouraged in our climate, where few (if any) of the large-growing plants have theſe agreeable effects in ſo high a degree.

CHAPTER XXXVI.

THE *ARBUTUS*, or STRAWBERRY TREE.

The SPECIES *are:*

1. The common STRAWBERRY TREE, with round fruit.
2. The STRAWBERRY TREE, with longer flowers and egg-ſhap'd fruit.
3. The ſmooth-leav'd STRAWBERRY TREE.
4. The cut-leav'd STRAWBERRY TREE.
5. The red-flowering STRAWBERRY TREE.
6. The STRAWBERRY TREE with a double flower.

THE five ſorts firſt mentioned, are to be propagated either by ſeeds or layers. The method by ſeeds I ſhall firſt direct. Theſe ſeeds are commonly ripe from the middle of November till the end of December, as the ſummer and autumn have been more or leſs kindly: But one caution is neceſſary to be given in gathering them, which is, not to do it all at once, otherways a great part of them will be good for nothing, as there are many ripe and unripe fruit on the tree at the ſame time. The ripe berries are eaſily diſcovered from thoſe that are not, by becoming, from the richeſt ſcarlet, of a deep browniſh tawny colour: Therefore, from the firſt time you diſcover any of them of this hue, examine your trees every two or three days, and gather them as long as there are any remaining. Theſe berries retain their

growing quality a very ſhort time. The common practice is to ſeparate the ſeeds from the pulp immediately as they come from the tree: But having long been poſſeſſed of a parcel of large Arbutus's, which bore fruit annually, and from which I have raiſed many plants, I have experience of their culture, and know this is not the beſt method; but adviſe the whole berry to be preſerved entire, and mix'd with dry ſand till the ſeaſon of ſowing, when, by ſoftly rubbing them between your hands, they will readily ſeparate from the pulp, and with that and the ſand may be ſown together.

About the middle of March, prepare a moderate hot-bed of tanners bark; and if the quantity you intend to raiſe is large, lay on ſix inches deep of the fineſt rich looſe mould, and ſow the ſeeds on it, covering them not above the ſixth part of an inch deep; but if your quantity is ſmall, you may ſow them in pots, and plunge them up to the rim in the tan. In five or ſix weeks the plants will begin to appear above ground, when they muſt be frequently but very lightly ſprinkled with water, from a ſmall watering-pot with a fine roſe; for, being then very tender, if the water is careleſsly daſhed on them, many will be deſtroyed. Let the bed be ſhaded with mats during the heat of the day; and when the plants have been a month above ground, they may receive the evening dews, and gentle ſhowers, more and more as they advance in ſtrength, till about the beginning of Auguſt, when, having been well managed, the glaſſes ought to be taken off, that the plants may enjoy all the heavenly influences in mild weather; but as ſoon as winter approaches, it will be neceſſary to have the glaſſes at hand, to replace in ſevere weather, but attentively giving them all the open air when otherways.

THE ſucceeding ſpring, about the beginning of April, prepare another hot-bed, which need only to be arched over with hoops, and covered with mats; raiſe the ſeedlings (which, with regular care being taken, ought to be ſix or ſeven inches high) with a trowel, with all the earth poſſible adhering to them, and put them in penny pots filled with ſuch ſoil as formerly mentioned; plunge theſe to the rim immediately on removal into the hot-bed; water them, and continue conſtantly to do ſo gently as you ſee the ſurface become dry, and let them remain in this ſtate till the beginning of Auguſt; but harden them gradually, by expoſing them to the open air all the preceding month in moiſt calm weather. At this time take them out of the bark, and place them in any warm ſpot, under the protection of hedges, till October, when they may be expoſed to the winter ſun in any ſituation moſt convenient, where a mat can be thrown over them during a ſevere ſtorm. The following ſpring, take all the mould (now exhauſted) from the ſurface, till you approach the roots, and fill the pots again with rich earth; remove them to a ſhady border till autumn, watering them in dry weather every ſecond or at moſt third evening, and then expoſe them again under a wall or hedge to the winter ſun.

HAVING now ſtood two ſeaſons in the pots, let them be ſhaken cautiouſly out of them with all their bulks of earth, which may eaſily be done, as by this time the under part of the pots will be full of roots and fibres; pick away as much earth from the outer part of the bulk, without breaking the whole, as you can, not diſturbing the roots, and cut off with a very ſharp knife ſuch as from confinement may be mouldy or muſty; plunge them in water and earth for an hour, and then place them in two-penny

pots, where they may continue two or three years as your occaſions require; but keep them the firſt ſeaſon under ſhade and ſhelter, and water them regularly and plentifully in dry weather, after which they will require no extraordinary protection, or further trouble, than watering, with other potted plants, as the ſeaſon requires; only obſerve, every ſpring, to take away all the earth that will come from the ſurface of the pots, and replace it with that which is freſh and rich.

THESE plants being now ſtrong and hardy, may be removed to the places of their abode for good, which ought to be either by nature or art, a generous dry ſoil, and under the covert of other trees at a proper diſtance; for though I never knew any ſtrong plants of the *Arbutus* killed in a good ſoil and ſituation, except early in life, in the year 1740, yet, as I ſhould not chuſe running the ſmalleſt riſque of loſing whole plantations of ſo lovely trees, and waiting ten or twelve years to ſee them again in any degree of perfection, I would warmly adviſe, that every nurſeryman, at leaſt ſuch who have the advantage of protection, ſhould keep a large ſtore of well-grown plants of them, from three to ſix or eight feet high, in pots, leaſt ſome fatal ſtorm ſhould again rob us of thoſe in the open ground, and which would in ſome meaſure repair that misfortune.

THE reaſon of directing the confinement of theſe plants ſo long in pots, is, that their roots are naturally looſe and ſtraggling, with very few fibres, from whence great numbers of them never miſs to fail when removed to the open ground; but being contracted in their bounds, and aſſiſted by the heat of the bark, their diſpoſitions are changed, and they produce roots and fibres in great abundance.

It muſt alſo be obſerved, that this tree is not fond of being much pruned at removal, which therefore ought to be performed either a year before or after that operation.

The ſort with double flowers is more dwarfiſh and tender than the other kinds: It does not readily ſucceed either by budding or common grafting, but may be propagated by inarching a branch of it on any of the other ſorts, which ought to be free-growing healthful ſtocks, otherways they will not unite well, or be long-lived.

The *Arbutus* is certainly amongſt the moſt elegant and beautiful plants our country produces in a vigorous ſtate; and, to a perſon fond of Gardening, who paſſes the winter in the country, I cannot think any tree more worthy a careful culture in ſo cold and inhoſpitable a climate as Great-Britain uſually is in the winter months. To pop in from the open fields, or even from plantations of other trees, to a grove of theſe protected from ſtorms, their leaves ſhining with the moſt chearful verdure, their bloſſoms ſmiling as in ſpring, and their boughs loaded with the richeſt ſcarlet-coloured fruit, muſt inſpire any one capable of being affected by the beauties of nature, with the moſt lively and agreeable ideas.

These trees will not ſucceed in moiſt, heavy, or clay land; they will grow tolerably well in a thin and ſandy ſoil, though not rich, but they moſt affect that which is deep, loamy, and generous. They will riſe with us above thirty feet high, in a favourable ſituation ſheltered at ſome diſtance by other trees.

CHAPTER XXXVII.

THORNS.

Their CULTURE from the SEED, till they arrive to the ſize of becoming Fencible Hedges at tranſplanting.

The SPECIES *are:*

1. The common HAWTHORN.
2. The double flowering HAWTHORN.
3. The Glaſtenbury THORN.
4. The Cockſpur, or Virginian HAWTHORN.
5. The Virginian HAWTHORN, with long ſtrong thorns.
6. The Virginian HAWTHORN, with a plum leaf, and black fruit.
7. The common HAWTHORN, with white fruit.
8. The American HAWTHORN, with yellow egg-ſhaped fruit.
9. The American HAWTHORN, with yellow round fruit.
10. The Maple-leav'd HAWTHORN.
11. The Pyracantha-leav'd THORN.
12. The Cockſpur HAW without Thorns.
13. The narrow-leav'd HAWTHORN.
14. The Gooſeberry-leav'd THORN, with yellow fruit.
15. The common Nottingham MEDLAR.
16. The large Dutch MEDLAR.
17. The Neapolitan MEDLAR.
18. The Virginian MEDLAR, with ſhining leaves.

19. The Dwarf MEDLAR, with red fruit.
20. The Dwarf MEDLAR, with black fruit.
21. The large red Virginian AZEROLE.
22. The AZEROLE with yellow fruit.
23. The PYRACANTHA, or EVERGREEN THORN.

THE uſual method of propagating the common white Thorn, with which I ſhall begin, is ſo univerſally known, as to render it unneceſſary to be related here; and the more ſo, as it is very faulty, and will admit of as many improvements in its culture, as any plant hitherto mentioned in this Treatiſe. Theſe plants, from the ſeed-bed, are commonly ſold at ſo low a price, that the moſt ſkilful nurſeryman cannot afford good Thorns for double the uſual rates. From this cauſe, which is ſtiled ſelf-defence, they are generally ſown extravagantly thick; and nothing is more common, than to hear nurſerymen exulting in their knowledge and ſucceſs, by having more plants on the ſame quantity of ground than their neighbours, unmindful that they are boaſting of their ſhame, that the plants are good for nothing, and that an experienced judicious planter would not take a preſent of them for his own uſe. But as the nobleſt and moſt uſeful improvements in agriculture, in a great meaſure, depend on the beſt methods of cultivating this common hardy plant, I ſhall treat it with more diſtinction than it has hitherto been, and feed it with better fare. The practice I ſhall here direct I do not mean to inſinuate to common nurſerymen for ſale, as the reaſons above given make their compliance impracticable, till one or other bolder than the reſt, or rather private gentlemen, lead the way,

which they will no ſooner do, than find their account in it, become ſenſible of the true value of Thorns from their good or ill quality, and encourage thoſe nurſerymen only who have ſkill and honeſty enough to beſtow a good culture: To private gentlemen therefore, and their gardeners, I mean principally to communicate theſe, the beſt inſtructions I am able to give, for the moſt ſucceſsful and ſpeedy manner of raiſing the ſtouteſt, hardieſt, and laſting Thorn hedges.

THE berries, which are moſt commonly gathered too ſoon, ſhould remain on the trees till the end of October, that they become of a blackiſh colour, and their fleſh begin to decay. They are uſually kept in ſacks after gathering, and buried in heaps on the gardener's receiving them: But this is a material blunder, as, from the thick pulp in which the berries are incloſed, they become extremely hot; whence ſome of the ripeſt kernels, not yet hardened, vegetate, and of courſe periſh. Many crops have I known fail from this ignorant practice, when the owners could aſſign no cauſe for their loſs. Let your Haws then, as ſoon as gathered, be ſpread on an airy floor for five or ſix weeks, till the ſeeds are dry and firm; from this plunge them into tubs of water, and diveſt them totally of their pulp, by rubbing them between your hands with a little ſand; which being done, ſpread them again on the loft three or four days, till quite dry, and mix them thoroughly with fine looſe ſandy mould, in quantity not leſs than the bulk of the ſeeds, and lay them in a heap againſt a ſouth wall, covering them over three or four inches deep, with ſoil of the ſame quality as that with which they are mix'd; and in this ſituation let them continue till the ſecond ſpring, as the ſeeds, tho' ſown, will not appear the firſt year.

In order that the berries may be as equally mix'd with the ſoil as poſſible, it will be neceſſary to turn over the heaps once in two months, blending the covering with the berries, and, at every turning, give them a freſh covering in the winter months. For want of this precaution, in not mixing the ſeeds properly, and diveſting them of their pulp, we univerſally ſee, that ſeldom one half of the ſeeds appear the ſeaſon of ſowing them, but continue in the ground, though freſh and ſound, another year; and then, if the former year's plants are not all raiſed, which is rarely done, the remainder, by coming up under their ſhade, are ſtarved, and good for nothing. But I ſhall now proceed to ſuch a practice (having attended to what has been ſaid) as will obviate theſe unlucky circumſtances.

The berries of the Thorn begin to vegetate with the earlieſt plants, and, in the natural ſeaſon of their growth, will ſpring, if kept in any conſiderable quantity together, without the aſſiſtance of earth; whence it becomes indiſpenſibly neceſſary, to be prepared, the firſt dry weather in February, to ſow them. This being come, ſeparate the berries from the looſe ſoil in which they were mixed, with a wire ſieve, without which it will be impoſſible to ſow them in an equal manner. The ground ought to be of a good natural quality, dry, and not lately acquainted with dung, which, unrotted, has very malignant effects on many plants, and on none more than the Thorn; but good freſh land being well prepared, divide it in beds three and a half feet broad, with alleys of eighteen inches between them; puſh over a little of the ſurface of the beds to the alleys, as is practiſed for ſmall kitchen-garden ſeeds; ſow them with great care, ſo that they may not riſe in cluſters, and that the plants, as near as

can poſſibly be computed, be not cloſer than an inch to each other; let the ſeeds be ſoundly clap'd into the earth with the back of a ſpade, draw the ſoil back again you had puſhed off, and add to that covering, from the alleys, to the depth of half an inch only; for no plant is more delicate, when riſing, than the Thorn, or more readily ſmothered by too deep a covering.

Thus managed, the Thorns will all appear the ſeaſon of ſowing, which is properly ſaving one half of their berries, and procuriny an equal crop of ſtrong plants.

The ſucceeding ſpring, draw out all the largeſt plants where too thick; ſhorten their roots, cut off ſo much of their tops as to leave them about two inches above ground when planted, and lay them (but beware of dibbling) in lines a foot aſunder and four inches diſtant in the line, to remain two years.

At the ſame time, I have directed Thorns to be ſown on beds in the common way, though much thinner. Senſible that I ſhall not prevail on many gardeners at once to relinquiſh theſe prejudices that cuſtom has confirmed, yet ſome I have the happineſs to know of more liberal ſentiments, and who want no more than a reaſonable hint to try any experiment that has a ſeeming tendency to promote, by a better culture, the growth of our hedges and Foreſt-trees: To theſe therefore, and to ſuch as are not ſtraitened for ground, I, from the moſt ſolid foundation, adviſe the following practice:

Sow the berries thin, or rather drop them in drills, made either with your fingers, or with a very ſmall hoe, at eight inches

aſunder the firſt two drills, and double that diſtance between them and every following two, being careful they are no deeper covered than directed for theſe in beds; let the ground be kept very clean and mellow about them till the ſucceeding ſpring, and draw them, where too thick, as formerly; after which, cut the remainder with a ſpade, about five or ſix inches below ground, and let them remain another year, having pointed over the ground between the lines.

THAT this practice is no vague opinion, but much preferable to crowding them in beds, carries the cleareſt demonſtration alongſt with it, to every man of the leaſt attention, who does not chooſe to ſhut his eyes, and who will only look at theſe plants on the edges of beds next the alleys, where he will univerſally find them of double the ſize, and more abundant in roots than in the middle of the beds.

NOTWITHSTANDING the preceding directions, both for preparing and ſowing the berries, are the beſt rules I know to procure ſtrong well-grown plants, yet, when numbers only are deſired, without regard to ſaving time, or their future quality, many more may be procured with leſs trouble and expence, by ſowing their ſeeds immediately after being ripe, or the following ſpring, of which the latter is the beſt ſeaſon, as, from that time, the ſurface of the ground will be but one winter battered with the ſtorms, in place of two. Theſe ſeeds may be covered at ſowing, double the depth of thoſe that are to appear the firſt ſeaſon. In autumn, rake from the beds all moſſy corrupted particles, and, in the following ſpring, before the vegetation is briſk, reduce the covering with a ſhort-teeth'd rake to half an inch.

From this practice, all the ſound ſeeds will appear at once ; but the plants will not be one fourth-part of the ſize, or have near ſo good roots as thoſe whoſe berries have been preſerved as directed, and ſown on freſh looſe ſoil, where they are to appear that ſeaſon. From the ſmall ſize of theſe plants, it will be neceſſary they remain in the ſeed-bed two years.

THORNS may alſo be propagated to much advantage, and two years time ſaved, by cuttings from their roots. For this purpoſe, at removing a nurſery of theſe plants, cut off all unneceſſary roots that are ſtraight and clean, of one, but not more than two years growth ; let them not exceed the length of four or five inches, and, either early in October, or February, lay them in drills cut out with the ſpade, with their tops a quarter of an inch below the ſurface ; let theſe drills be a foot aſunder, and lay the roots in them three or four inches ſeparate, as not a ſingle freſh and ſound root will fail that has been planted with care and attention. If the land has been well prepared, of a good quality, and kept clean and mellow, the plants will be from eight inches to a foot high the firſt ſeaſon ; and the following ſpring, having pointed over the ground between the lines, they ought to be cut with hedge ſhears, within two or three inches of the ſurface, when, by continuing a proper culture during the enſuing ſummer months, they will in general be eighteen inches high, and moſt abundantly rooted at two years old.

I AM very far from meaning to divert any one's attention from following the juſtly eſtabliſhed principles of raiſing plants in general from their ſeeds, fully ſenſible of its preference to all other practices in moſt caſes ; but as there are few rules without ſome

exceptions, this appears to me one; the ſaving of time has been obſerved: To which I ſhall add, that theſe plants, in place of one ſtrong perpendicular ſhoot, (which is commonly the caſe of young vigorous ſeedlings), puſh out a number of ſhoots very much equal in ſtrength, and continue to grow in that manner, without a few branches running away with the juices that ought to nouriſh many in much the ſame proportion; whence, from experience, I muſt affirm, that for the moſt equal, cloſe, and impenetrable hedges, plants raiſed from young and tender roots are the beſt; but for ſingle trees, meant to grow in the moſt comely form, and aſpire to the greateſt altitude, thoſe propagated from ſeeds are no leſs preferable.

All thoſe Thorns may now be treated in the ſame manner, and in October ſhould be planted out in lines, at leaſt eighteen inches aſunder and ſix inches in the line, their roots having been ſhortened, and their tops cut off, ſo as to ſtand four or five inches above ground when planted. In this nurſery they ſhould remain no more than two years, and the ground ought to be dug both in autumn and ſpring between the lines; it will likeways much increaſe their rooting abundantly, as well as promote vigorous clean ſhoots, that, the year after having been planted in this nurſery, they be again cut over an inch or two above the former cutting.

In autumn, remove theſe to another quarter, and plant them in lines four feet aſunder and two feet diſtant in the line: Let them now be cut to the height of a foot or fourteen inches, and, about the end of June, clip them ſtraight in the ſides and thin in the tops. Having ſtood here a year longer, cut them again

to the height of two, or two and a half feet, as, from a favourable or bad ſeaſon, their ſhoots have been more or leſs vigorous, and clip them as formerly. The ground having been of a good quality, and properly cultivated, the third ſeaſon, they will admit of being cut at three and a half feet high about mid-ſummer, and raiſed the following autumn, when they may be planted handſome hedges about four feet high, that will at once afford both pleaſure and ſhelter.

But to bring them to the laſt degree of perfection, let theſe be once more removed with bulks of earth, which they will naturally have, if carefully and ſkilfully raiſed. For this purpoſe, let a trench on each ſide be dug up conſiderably deeper than the ſpreading roots, and, with a ſharp hedge-bill, cut acroſs all the downright ones, which, from the former tranſplantations and proper dreſſings, will not be many or ſtrong; but while this is performing, let the plants be held ſteady from the oppoſite ſide, which otherways, by ſhaking, would occaſion much of the earth to moulder away. This being done, lay them ſoftly down on one ſide, and with a ſharp knife ſmooth the extremities of their roots, equally ſhortening thoſe that are downright or too ſpreading. Let ſtraight trenches now be ready to receive them at eight, or, where land can be ſpared, ten feet aſunder; in theſe trenches let them be placed the ſame depth they formerly ſtood, and at four feet diſtance in the line, giving them an abundant watering; cultivate the ground about them, which may be crop'd with various kitchen herbs, and here let them remain three years, clipping, and in all ſhapes dreſſing them to their proper form, as if planted out for good.

EARLY in October, while the ground is warm, begin planting theſe hedges where they are meant to remain. To effect this properly, throw out a trench as formerly, but both wider and deeper than to contain the roots: If the ground is poor and thin, lay a ſtratum of any middling freſh ſoil at the bottom of the trench ſix or eight inches deep, or, where your ſituation will admit, the more the better; and having levelled the trench to a depth ſuitable for receiving the plants, let the earth ſettle for ſome days, that it may not afterwards ſubſide in any material degree. In the mean time, before raiſing the hedges you intend, go over them with a light ſharp hedge-bill, and cut out all ſuch branches, particularly towards the top, as are too thick crowded together; cut them to your deſired height, not exceeding ſix feet high; then raiſe, and plant them as directed for the former removal, at ſuch diſtances as to join entirely cloſe together; let them have a plentiful watering at planting, and repeat it three or four times during the dry ſpring and ſummer months, when, after being eſtabliſhed one year, they will reſiſt the rudeſt attempts of the wildeſt animals in this country.

THE wind is the great enemy of new-planted Thorn-hedges at any conſiderable ſize; but, by the judicious performance of what has here been directed, from which the root will be a full balance for the body, it cannot poſſibly have the ſmalleſt ill effect. Every gardener of common underſtanding, in order to ſave ſeveral years growth, juſtly enquires after old hedges, (I mean ſuch as are not, from age or other circumſtances, in a decaying ſtate), in order to cut them over to effect that deſirable end. I need not mention, that ſuch grow more in one year than a young Thorn in three or four; and if they grow freely without any preceding culture, when cut over, and removed at the ſame time,

(which by the bye muſt be no ſmall violence done them at an advanced age) I am at a loſs to find out a reaſon why, having been cultivated ſo as to give them ten times the number of roots they poſſibly can have in their wild ſtate, without wounding them, the common deſtruction of old trees, and brought them to ſuch a proportion of body as thoſe roots will keep ſufficiently ſteady; I ſay, theſe circumſtances conſidered, from what foundation can a doubt ariſe, that Thorn-hedges immediately fencible will not ſucceed? Strange, that in a country which boaſts of abounding with the beſt gardeners in Europe, ſuch ſimple eſſays of their art (and which could not fail of anſwering the intention) ſhould not be frequently executed for the benefit of ſuch as are willing to beſtow a little more than common expence, and chuſe (if I may be allowed the expreſſion) to overtake time, or at any rate to repair what has been loſt, by the immediate poſſeſſion of what, to a ſober virtuous mind, is amongſt the moſt agreeable and rational enjoyments!

I CANNOT leave this ſubject, without taking notice of, and warning againſt the baneful practice of almoſt univerſally clipping our hedges thick, and broader at top than bottom. This, in my time, has rendered of little benefit the greateſt part of the fences within my knowledge, which, properly trained, would have been the higheſt ornament, and moſt ſolid improvement our fields are capable of receiving. How a practice ſo glaringly oppoſite to nature, and even common ſenſe, ſhould be adopted in a country devoted both to the ſtudy and practice of planting, is ſtrange to imagine! but unluckily it requires no proof that ſuch is the caſe. The under parts of the hedges ſo trained, are quite deprived of the benefit of the rains and dews, theſe indiſ-

penſible ſupports of their ſtrength and verdure, and are in ſome degree ſmothered, from whence the weakeſt branches annually periſh, till at laſt the bottom becomes quite naked, which no future care or induſtry can repair but by cutting them over, or at leaſt reducing their height, and pruning them cloſe to naked trunks. This, tho' a certain, is yet a tedious cure; and to expoſe one's fields to their original cold and defenceleſs ſtate, after for many years beſtowing as much as, properly applied, would have made them continue beautiful and fencible for ages, muſt be a mortifying circumſtance to any man, but, the ſhortneſs of life conſidered, doubly ſo to one advanced in years: Let it then be invariably obſerved, from the firſt clipping, till your hedges arrive at their intended height, that you make them gradually taper from the bottom, till they become quite ſharp at top, in form of a razor. This too is ſaving money, as the apparatus of ſtanding-ladders, ſcaffolds, *&c.* neceſſary for cutting the tops of high hedges, becomes expenſive, and, with the hands required conſtantly to move them, will coſt much more than clipping both the ſides, which can eaſily be performed, to the height of fifteen feet, by a man ſtanding on the ground, with the aſſiſtance of ſpring-ſhears.

MANY have been the arguments with men of more words than reflection and obſervation, whether or not it is neceſſary to continue the practice of clipping hedges till old, where ornament is not required, and that are only the boundaries or diviſions of corn or graſs fields. Good gardeners, I am well perſuaded, never diſputed on this ſubject; for if the greater warmth hedges afford to the grounds around them conſtitute their greater value in this cold climate, I ſhould think no ſenſible man can heſitate to give an extraordinary preference to thoſe that are clip'd;

the reaſons for which are too apparent to require further explanation. I have never ſeen hedges, growing for a number of years rude, that were either warm in winter, or cloſe at bottom, which proceeds from a very natural cauſe. The Thorn tree, when under no diſcipline, grows in a looſe ragged manner, with heavy and ſpreading tops, which, for want of air and moiſture, deſtroy many of the under branches, and when planted in looſe or wet lands, the winter winds diſplace and disfigure them extremely; ſo that, all circumſtances conſidered, I could never diſcover any well-founded argument againſt clipping them but the expence, which, if annually done after a proper manner, in the months of July and Auguſt, will be ſmall in proportion to the pleaſure and benefit you will otherways derive from them.

DIGGING and keeping clean a border on each ſide of your hedges, at leaſt for a few years, will alſo be well-beſtowed labour, as it will much accelerate their growth, and contribute to their ſpeedily thickening at bottom.

MANY improvements may likewiſe ſurely be made on common practice, in the diſpoſition and manner of planting our young Thorn hedges. Some lands indeed are ſo thin and meagre as not to produce tolerable fences without a greater depth of ſoil, but hardly any are ſo bad (very wet grounds excepted) as not to nouriſh Thorns in ſuch a degree as to become fencible, by an addition of ſoil, though of the ſame quality, well blended together, and expoſed to the ſummer's ſun and winter's froſt.

WITHOUT proceeding immediately, however, on this ſubject, I cannot help taking notice, that the common method of laying

our Thorns on the ſides of banks above ditches, and raiſing bulwarks of turf over them, is an abſolute oppoſition to every principle of nature I am capable of diſcovering. I have often been told, but was never in the leaſt convinced, of the utility of this practice; nor can I poſſibly believe, that a plant compreſſed in this manner, without its roots readily partaking of the heavenly influences, can be equally nouriſhed with one growing on a level looſe ſurface that freely enjoys them all. But without further endeavouring to demonſtrate the abſurdity of hedges in this ſituation, let us ſee the effects of it, and let any conſiderable extent of ſuch that are warm, ſightly, and fencible, argue in their defence. On this appearing, I ſhall gladly acknowlege my error: In the mean time, I can ſhow, in moſt counties of the kingdom, large tracts of land ſo incloſed, and where, in the moſt conſiderable eſtates, there is not a ſingle park that will confine cattle, without many gaps being made up with paling, or dead bruſh-wood, the laſt of which increaſes the evil, as nothing is more contagious to the living branches than being mingled with dead ones; neither can hedges ſo planted be with eaſe clip'd from the bottom of the ditch, or when any of the plants periſh, can they again be properly inſerted. But what is worſt of all, if the ſoil is not an obſtinate clay or till, the earth annually moulders away; ſo that, in a few years, one ſide of their roots are left naked and expoſed to the weather, whence too, from the weight of the tops, the winds often bring down both hedge and bank. In ſhort, from the general ſurvey I have made over moſt parts of the kingdom, I cannot help thinking that method of incloſing has more retarded the advantages which muſt have ariſen to judicious farmers from a better ſyſtem, than all the other blunders I know put together. It has likeways, by exhibiting a bad

example, deterred many from incloſing at all, and put others on building ſtone-walls at great expence, though neither ſo beautiful, nor improving to the fields around, as lofty hedges well trained. I ſhall therefore endeavour to give ſome few hints, that, if ſkilfully executed, will certainly promote their uſual growth and thickneſs, and that at little, if any greater expence than attends the common practice.

In order to incloſe a dry thin ſoil, mark out the ſides of your ditch four feet wide; raiſe the turfs from the ſurface ſixteen inches ſquare; leave a ſcarſiment of eight inches within the top of the ditch, and lay them with the green ſide downwards; three rows of turfs will exhauſt the ſurface of the ditch, when lay a line of Sweet Briars three or four years old, (that have been tranſplanted), from a foot to eighteen inches aſunder, and cover them with the beſt earth below the turf, laying the remainder, ſo far as good, immediately beyond their roots, ſo that a deep border of the beſt ſoil that the place will afford, to be afterwards planted with Thorns, may be formed. Procure turf from the adjacent grounds, till you raiſe the bank eighteen inches higher, and lay another line of Sweet Briars, placing them ſo that every plant may be above the interſtices of the former line. Theſe being alſo properly covered, finiſh your ditch to the depth of four feet, and as narrow at bottom as a man can ſtand to heave the ſoil over the bank: Proceed then to compleat the bank, which, for an immediate outward fence, ought to be four feet high; and lay the higheſt row of the turfs with the green ſide upwards, which will ſooneſt make them unite, and conſolidate the whole. The common practice is to make theſe banks ſlope in the ſame proportion the ſides of the ditches do; and the argu-

ment for it is, that they ſtand the weather better. But if the turfs are well laid, and ſoundly clapped together with the back of a ſpade, there is not the ſmalleſt danger of their failing at that height, and therefore I would adviſe them to be laid within ſix or eight inches of being perpendicular: My reaſons for which are, that I mean this bank, with the Sweet Briars planted on it, as ſoon as poſſible to hang over that ſide of the ditch under it, to prevent violent rains from waſhing it down, and which, by giving it the uſual ſlope, cannot ſo ſoon be affected. It will alſo be a better defence againſt cattle, who often make attempts to get over ditches and banks that have too eaſy a ſlope; but from this poſition they have no footing, and when the Sweet Briars are grown two years, cattle in the bottom of the ditch cannot raiſe their heads without being oppoſed by them, which they will not attempt a ſecond time. A ſheep-park thus incloſed, will, in three or four years, confine theſe animals no leſs effectually than the higheſt wall, as they, and indeed horſes or cows, cannot bear the touch of them. No perſon in ordinary circumſtances need ſcruple the expence of the Sweet Briars, as there is not any plant more eaſily or expeditiouſly raiſed; but if you have them not, and do not chuſe the trouble or delay of raiſing them, they may be purchaſed for a few ſhillings *per* thouſand. The Briars abound with ſo great a quantity of penetrating roots and fibres, as ſoon to render any bank they are placed on impenetrable as a wall; and there is no plant yet diſcovered ſo proper for filling up the gaps of old hedges of all kinds, where plants of the ſame ſort with theſe hedges will not ſucceed. But I ſhall proceed to the inner ſide of the bank.

HAVING furniſhed this with the beſt earth you can procure, ſlope it ſo gradually as that the rains may not waſh it down, to

about three feet below the level of its top, which is allowing a foot of forced ſoil above the ſurface, for a border to receive the Thorns. This border ſhould be at leaſt two feet broad within the hedge, and made hollow, the better to retain the moiſture. On this plant your Thorns in thickneſs proportioned to the ſize of your plants; for the common run of Thorns three or four years old, ſix inches diſtance is the general rule, but for ſtout ones that have been twice removed, and conſequently have abundance of roots, a foot will be cloſe enough. Theſe Thorns ought not to be planted upright, but ſhould be laid as near as may be in a horizontal poſition, ſo that the top of the one extend as far, and be juſt above the root of the other. This method of planting, in place of a few vigorous rambling ſhoots from the top of the plant, which is uſually the caſe with ſuch as are planted perpendicular, will make them bruſh from the bottom like a fan, and in two years, by keeping them as has been directed, they will be ſo cloſe that a ſmall bird cannot get through them. But let it be obſerved, I do not mean this to be practiſed in the nurſery, nor even in the field, for ſuch as are above ſix or ſeven years old, or that are planted above the height of two, or two and a half feet high, as this oblique poſition, in large bruſhy plants, will not admit of their roots having the ſame ſtability to reſiſt the winds as thoſe placed upright.

The different ſizes of Thorns, to procure fencible hedges ſooner or later, has already been mentioned; and it muſt be left to every man to judge for himſelf, what money or labour he chuſes to beſtow: Therefore I ſhall only ſay, that an old Thorn is hardier than a young one, and will ſucceed in coarſe obſtinate grounds, where the other will periſh; to which I may add, that

the difference of expence between thoſe of three and ſix years old is nothing, as, allowing the oldeſt to be double the price, they will go double the length. In unkindly ſoils, what I have here ſaid, I know experimentally cannot be juſtly refuted; but it may be returned, that ſmall Thorns planted in good ſoil, at the ſame diſtances they ought to ſtand when older, will in time make equally good hedges. This I muſt grant; but the difference of expence can bear no proportion to the advantage of having a good fence three or four years ſooner, and ſaving the expence of culture for that time, which for ſmall plants is much greater than large ones; ſo that in the main, I cannot think any circumſtance, but that very bad one of poverty, ſhould juſtly excuſe a man who plants ſmall Thorns, where large ones are to be had at a moderate price.

The ſame rules directed for training Thorns in the nurſery, to be afterwards planted at the ſizes of fencible hedges, are to be continued progreſſively, when planted out for good in the fields ever after.

If it is objected, that I have excluded Thorns from being planted in the banks above ditches, and yet directed Sweet Briars there, to the reaſons already given I ſhall only add, that the Sweet Briar is an exceeding hardy plant, and will ſucceed in many ſoils and ſituations where Thorns will not; and what is more material in the preſent caſe, is, that being a dwarf light ſhrub, they never arrive to ſuch a ſize or weight, as to be affected by the winds in any degree that will in the leaſt looſen or ſhake the banks, which is too frequently the caſe with Thorns.

Of all the devices yet fallen on for planting hedges, none are ſo natural, and effectual for the inward diviſions of dry ground, as that of doing it on the ſurface of a well-dug, or trenched border, thickened where the ſoil is thin, or mellowed by labour and warm looſe earth, where cold and ſtiff. Next to that, both in point of beauty and utility, is on the top of a ſunk fence built with ſtone; but even there, though for ſeveral years they will grow much about as faſt as on a level bottom, yet, when the roots approach the wall, they are of conſequence retarded in their progreſs on that ſide, and will not afterwards grow with the ſame luxuriance as on the ſurface unconfined on both ſides.

In wet lands, not only ditches, but double ones, and deeper than thoſe directed, are indiſpenſibly neceſſary, as the firſt capital improvement that can be made, which ought to be ſo diſpoſed as to receive ſmall covered drains from all the wet quarters of the adjacent fields, at the neareſt diſtances may be, to convey the whole water away; and which, in many ſituations, may ſave a great expence, by ſhortening the unneceſſary diſtances of theſe drains.

Many hard-laboured Treatiſes have been written, and plans drawn, directing the manner of draining grounds, but, for general practice, they are all ineffectual, and of little other uſe than to amuſe the ignorant. The different kinds of drains for different ſoils, accommodated to the materials thoſe ſoils produce, or that are conveniently to be had, may be directed; but no language can convey ſuch rules as will inſtruct the unexperienced in the knowledge of an univerſal ſyſtem, as the ſame plan will

rarely anſwer any two fields of a hundred, and therefore, without getting a particular plan of every ſpot, we get nothing, a generally uſeful one being impracticable. Nature muſt dictate the courſes we are to follow, good ſenſe purſue thoſe dictates, and experience conduct the different manners of operation.

WHERE double ditches are determined, the breadth of the bank between them muſt be proportioned to what plantation you there intend; but in general they are made too narrow, from whence the bank becomes dry, and the plants of courſe are not properly nouriſhed. For a hedge only, the bank ought to be nine feet at bottom, and eight at the top; for a hedge and one line of trees, ſixteen, that is, planting the trees at eight feet from the hedge, and four from the edge of the bank; and for two lines of trees, one on each ſide of the hedge, twenty-eight feet. This I think is the meaneſt allowance ought to be granted; but where what is commonly called ſtripes of planting are required, either for the benefit of the wood, or the improvement of the climate by ſhelter, the plantation ought to be broader or narrower as the incloſures they ſurround are greater or leſs.

LET the quality of the ſoil be conſidered in the conſtruction of ditches, and more baſe given to the perpendicular height, where the land is looſe and ſandy, or ſpungy and moſſy, than where well tempered and ſolid, or obſtinate clay and till. A ditch, on ſoils of the latter qualities, four feet wide, will admit of being the ſame depth; of the former, three feet depth to the ſame breadth, will in general be as much as it will bear, and ſo in proportion as the ditches are broader or narrower. In ſpouty and moſſy ſoils the Sweet Briars will be doubly uſeful, as they

will there ſucceed better than moſt other plants, and conſolidate the banks ſooner and more effectually.

THE fences in Windſor Foreſt, for containing the deer, and preventing their depredations in the adjoining fields and plantations, are highly characteriſed by ſome authors, and held by many improvers as the beſt model for hedges in general. But I am ſorry I cannot agree with their ſentiments, thoſe I am well acquainted with having lived a conſiderable time in the neighbourhood of them: They are conſtructed by throwing up double ditches, with the contents of which they form a bank between them; on the top of this bank, they plant a hedge-row of white Thorn, Crab, Maple, Hazel, Elder, Elm, and Oak trees; the banks they cram full of black Thorns, Brambles, and common Briars; below which, and a little above the ditches, they form a dead hedge, by driving ſtakes in the ground, interwoven with black and white Thorns, Brambles, Briars, or whatever bruſh-wood they can moſt conveniently procure, to protect the plants till they become fencible. That theſe kinds of bulwarks may frighten deer, or even lions, wolves, and tygers from approaching them, I cannot doubt, as they preſent a moſt unnatural, gloomy, and horrid proſpect, and which, in my opinion, highly deform a ſpot, otherways abounding with the ſweeteſt, richeſt, and moſt magnificent objects I ever beheld. One great argument uſed in defence of theſe fences, is, the profitable returns they yield for fuel, in a country where they have no coal nearer than London; but I ſhould think very little ingenuity might contrive how to raiſe more and better fuel on the ſame quantity of ground, without ſhocking the ſight, a great part of that being employed in trumpery that yields very little good fuel: In ſhort, I cannot

think them calculated for any thing, but a ſavage uncultivated country, where there is danger of being invaded by wild beaſts, whoſe incurſions they might probably repel.

WHERE hedges of uncommon ſtrength are required, I know nothing ſo effectual as double lines, planted in the triangular manner; ſo that the plants in one line may be directly fronting the interſtices of the other, whence animals attempting to force their heads through any weak part of one line, are met in the noſe, and repulſed by the plant oppoſite. Theſe plants too, growing in concert, afford a mutual aid by ſheltering each other, and will for ſeveral years grow faſter than a ſingle line.

STANDARDS of all kinds in hedges are highly deſtructive, as, by hanging over, they ſmother the plants below, ſhake them, and in all reſpects rob them of much nouriſhment.

HEDGES that have grown any conſiderable time wild and uncultivated, muſt neceſſarily become ragged and open. To remedy this, the common way to make them become immediately fencible, is plaſhing them; and where they are not above ten or twelve years growth, I have known ſuch become tolerable fences, when not too much wounded, (the common error) but done with ſkill and attention, being regularly clip'd afterwards; but if they are not taken about that age, the ſeverity of the wounds, neceſſary to make them comply to their proper ſtations, are ſo great, that in a few years many of them die, and becoming full of gaps, are more unſightly, and leſs fencible than ever; whence the advantage is of ſhort duration, and the remedy becomes worſe than the diſeaſe. But the only method of cure

I can deviſe, and which I have often ſucceſsfully practiſed for old overgrown Thorn-hedges, is to prune them cloſe to their bodies, and cut them over ſmooth, a good deal ſlanting, to the height of about four feet, and ſupply the gaps with old Hollies, if to be had, or, failing thoſe, with ſtrong plants of Sweet Briar, both of which ought to be diveſted of great part of their branches, which will make them puſh out a greater number of young ones more vigorouſly, reſiſt the winds, and ſooner become ſtrong equal fences.

In ſupplying theſe vacancies, however, a little extraordinary labour and attention muſt be beſtowed, by cutting down the roots of the old Thorns with a pick-ax, afterwards ſmoothing them with a hedge-bill, and making the hole as large and deep as the ſpaces will poſſibly allow them to be; to which, if freſh ſoil is added in place of the exhauſted earth taken out, your greater ſucceſs, from ſaving time by more liberal ſhoots, will largely repay the expence.

To deſcribe the various methods that have been practiſed by incloſing grounds with hedges and ditches, would be both tedious and unneceſſary; nor would it be difficult to direct a yet greater variety of ways hitherto unpractiſed, further than from making experiments, many of which I have tried; but the few rules here recommended, as they are the moſt natural and ſimple, ſo I have ever found them the moſt ſucceſsful, and believe ſaying more on the ſubject would be ſuperfluous.

The following thirteen kinds of Thorns are worthy of being cultivated in all good collections of flowering plants, where,

from the beauty and fragrance of their bloſſoms in ſpring, joined to the rich glow of their fruits in autumn, they have a moſt chearful effect, properly diſpoſed in the wilderneſs, or in groves near the houſe.

THEY are all, except the double-bloſſom'd ſort, to be propagated from ſeeds, where theſe can be procured; but as ſome of them are apt to vary from the parent plant, when increaſed that way, I ſhould rather adviſe their being grafted or budded on the common kind, from whence they will not only ſooner become fruitful, but ever after continue to be ſo, wherein their greateſt beauty conſiſts.

THE Medlars and Azeroles are cultivated, both for mixing with other trees in ornamental plantations, and for the ſake of their fruit in the kitchen garden, where they are planted in ſtandards and eſpaliers. They will ſucceed by grafting, or budding them on the common Hawthorn, but will be improved both in the ſize of the plant, and flavour of the fruit, by doing them on the Pear-ſtock. To inlarge the tree, a deep moiſt ſoil is neceſſary; but where fruit is the motive, a generous dry mould and warm ſituation is required.

LET the ſtocks for the Thorns, when grafted or budded, be in a free-growing vigorous ſtate, and about the bulk of one's finger, three or four feet above ground, which will be a proper height for theſe operations. The Pear-ſtocks, for the Medlars and Azeroles, muſt be proportioned to the uſes you intend them for: If for dwarfs, eſpaliers, or walls, graft them within three or four inches of the ground; but if for ſtandards, the ſame height as

for the Thorns will be better, as otherways (they growing in a looſe ſtraggling manner) it will be difficult to raiſe them with ſtraight clean bodies.

THE Pyracantha or Evergreen Thorn is a trailing plant, and cannot be raiſed to a ſightly ſtandard, but is very proper for covering walls near the houſe, where the ſhining verdure of the leaves in winter, almoſt covered with large bunches of rich ſcarlet-coloured fruit, is extremely beautiful. They are eaſily propagated from ſeeds ſown in February, in the ſame manner as the common Hawthorn, but in a ſhady border, part of which will riſe the firſt, and the remainder the ſecond ſpring, and theſe make much better plants than thoſe increaſed by layers.

I HAVE ever thought we pay too little reſpect to the common Hawthorn in our ornamental plantations, as, in the ſeaſon of its bloom, I know few trees exceed it either in beauty or fragrance; I would therefore recommend it more in wilderneſs work, as well as ſingle plants in lawns, where a conſiderable number of them, judiciouſly interſperſed with others, would highly decorate thoſe ſcenes. The Thorn too, unconfined, and its natural luxuriance of growth encouraged, becomes a ſtately tree; and the wood, which is extremely hard, and finely variegated, particularly towards the root, is not inferior to Box for many curious and uſeful purpoſes.

CHAPTER XXXVIII.

ON the PROPAGATION of TREES by LAYERS.

THE manner of preparing mother plants or ſtools, from which you are to propagate trees by layers, has already been directed under the article of the Elm Tree. Theſe directions having been obſerved, and ſtrong clean ſhoots produced, early in October begin the operation, with all the hardy deciduous trees that are moſt proper to be cultivated in that way, and which are mentioned under their reſpective names. In the firſt place, cautiouſly bend down all the principal branches around the ſtool, without wounding them, if poſſible, to comply, (tho' often directed and practiſed); let them be at ſuch diſtances from one another, as to admit all the ſmaller collateral ſide-branches to be laid between them, and let them be firmly peg'd down to the ground with hook'd ſticks, as otherways, if the ſhoots are ſtrong, the preſſure of the earth alone will not prevent their ſtarting up again. If the principal ſhoots have no ſide-branches fit to lay, that is, if they are not about a foot in length, let all under that be pruned cloſe away, and the main ſhoot be only laid; all the very ſmall twigs from the ſide-branches muſt likeways be cut cloſe, or rub'd off, as the fewer ſhoots the layers produce, they will be the ſtraighter and more vigorous. But before proceeding to cover them, I ſhall mention the different ways neceſſary to be practiſed with the branches, in order to facilitate their rooting.

SOME tye a piece of wire hard, round the twig, at that part where the roots are deſired, and prick it above the wire, through the bark with an aul, in ſeveral places.

WHERE the wood is very hard and unwilling to root, the branches are ſometimes cut by a ſlit upwards from a joint, as is practiſed in laying Pinks and Carnations, which is called by the gardeners tonguing the layers: But this ſeverity I would ſeldom chuſe to practiſe, as trees diſpoſed to root by layers at all, may be prevailed on to do ſo by gentler means, when theſe means are ſkilfully applied. The plants raiſed in that manner, are long of recovering their wounds, and not only very apt to be torn aſunder at taking them from their mother, but for a long time after on removing them.

TWISTING the place you deſign to peg down into the ground is often done, but with ſeveral kinds of hard wood it does not anſwer properly; with all the ſoft kinds it is an excellent practice.

THERE are other different operations performed in laying trees; but the ſpecimens given are the beſt I know, but one, which, though very ſimple, I have ſucceſsfully practiſed during the greateſt part of my life, and that is, ſcratching off the bark as deep as the wood, where the roots are wanted, about two or three inches in length, and two thirds round in ſtout branches, or leſs in ſmall ones.

HAVING treated the branches in one or other of the ways deſcribed, proceed to putting them in the ground, by pegging down that part where you have made any inciſion, and with both your hands preſſing it into the earth, till it become ſharp

at the joint, and the branch from that be quite perpendicular; for if they are only bent in the form of a club, they will not by any future culture make ſtately or handſome trees. Let them be covered about four inches deep, and their tops cut over two or three buds above the ſurface; and then raiſe up the earth round each of the ſtools a little higher than the bed of the layers, hollow'd within, in form of a baſon, the better to contain the rains that fall, or the water given them by hand, which in dry weather ſhould not be ſpared, as nothing will contribute more to their rooting abundantly.

It will likeways be proper to go over the layers about the middle or towards the end of May, and rub off all the buds and tender ſhoots but the moſt promiſing one, as, by a greater number of branches, the kindly effects of the rains and dews are prevented, and the large ſhoots ſmother the ſmall ones.

The autumn, as has been ſaid, is the beſt ſeaſon for laying all hardy deciduous plants; for ſuch as are delicate, the ſpring is a much ſafer ſeaſon, as, immediately after the operations neceſſary to be made, a hard winter ſucceeding might moſt probably kill ſuch totally: For the ſame reaſon too, I prefer laying the tender Evergreens at that time alſo, rather than the uſual ſeaſons of Auguſt and September. But for the hardy kinds, I know no other ſeaſon needful to be obſerved, than that in which one can beſt ſpare time, as the ſooner you lay them, you will the ſooner raiſe them.

Though ſome little inciſion is neceſſary on the layers of moſt hard-wooded trees, yet in the Lime, and many other ſoft pliable plants, nothing more is wanting than a proper covering, and attention to the other circumſtances of culture directed in general.

CHAPTER XXXIX.

ON GRAFTING AND INOCULATION.

OF all the aids Nature has received from Art in the productions of the vegetable world, none has perhaps been more aſtoniſhingly great and uſeful to mankind in the improvement of gardening, than what has been derived from the culture of trees and generous fruits, by grafting and inoculation. By this happy diſcovery, we can not only preſerve every ſpecies bountifully beſtowed on us by the great Author of Nature, which otherways, by inattention and ſloth, and without exerting that knowledge, would, many of them, have degenerated, by barely ſowing their ſeeds, but we have it alſo in our power, by the practice of theſe means, ever to improve the quality of thoſe, the nobleſt gifts the earth affords us.

I SHALL therefore mention the different ways of grafting that are or have been uſually practiſed, as, in certain caſes, all of them may be uſeful, where overgrown ſtocks, or ſuch as are not of a proper age and ſize for one manner of operation, may be accommodated to another; and then notice the ways I have found beſt ſuited to theſe different circumſtances. But ſome time before proceeding to the execution, let the materials be provided in the following manner:

THE grafts of all hardy trees are the better to be cut three or four weeks, and laid in a ſhady border ſix or eight inches deep, before grafting: Such, which the gardeners call thirſty grafts, are ever found to unite ſooner, and more certainly, than when the circulation of the ſap is equally briſk in both the graft and ſtock; and I never had more ſucceſs, than with grafts that were ſo much ſhrivel'd in the bark, and ſeemingly withered, as to be thought only fit for the fire by ſuch as were unſkil'd in the art.

WHERE your ſtocks are ſtrong, that is, not leſs than half an inch diameter, a ſtout ſtumpy graft with thick-ſet plump buds, is much to be preferred to a ſlender one, for the luxuriant growth of all hardy Foreſt-trees; but where bloſſoms and fruit are ſoon deſired, or the tree meant to be dwarfed, the reverſe muſt be obſerved.

THE grafts being cut and laid by the heels, their covering ought next to be prepared, by collecting the quantity neceſſary of ſtrong, fat, loamy clay, to which add a fifth or ſixth part of new-made horſe-dung, mix'd with ſome hay or ſtraw cut very ſmall, which will bind the whole better together, and prevent its rending and falling off the trees. Theſe muſt be well blended, by often beating, and pouring water on them every ſecond or third day, till they become ſolid and well incorporated; after which the whole ſhould be hollow'd in form of a diſh, not expoſed to froſt or drying winds, and kept moiſt by regularly pouring water on it as it becomes dry, till it is uſed.

THE inſtruments neceſſary for the different operations are:

1. A ſmall hand-ſaw, to cut off the heads of large ſtocks.
2. A good ſtrong pruning-knife, with a thick back, to make clefts in the ſtocks.
3. A ſmall knife, made very ſharp, to cut the grafts.
4. A grafting-chiſel, and a ſmall mallet.
5. A wedge, to keep open the clefts in large ſtocks till the inſertion of the graft.
6. A baſs mat, or woollen yarn, to tye the grafts cut in pieces at lengths proportioned to the bulk of the ſtocks.

SINCE the firſt invention of grafting, there have been many various ways of performing it; but the following has been found the beſt, and moſt ſucceſsful:

1. Grafting in the rind, or Shoulder-grafting, which is only proper for trees two inches diameter or upwards.
2. Cleft or Slit-grafting: This is proper for ſtocks from about three quarters of an inch to two inches diameter.
3. Whip or Tongue-grafting: This, for ſtocks not exceeding three quarters of an inch diameter, is the moſt readily performed, and far moſt ſucceſsful manner of any. By whip-grafting, the wounded ſtock ſoon heals, and where the growth is vigorous, in two years the ſtock and graft become ſo perfectly united, that one will hardly diſcover any inciſion having been made.
4. Grafting by approach, inarching, or ablactation: This is to be performed on plants in pots, or when the ſtock you

would graft on, and the tree from which you take your graft, ſtand, or can be brought ſo near together that they may be joined: But inarching is only proper for tender and exotic plants, as from this operation they never become vigorous hardy trees, though, to bring about the ſudden production of flowers and fruit, no practice has yet been found ſo ſucceſsful; and you may even inarch trees with the bloſſoms and fruit upon them, but this is committing violence, and it is better to allow an intimate conjunction, by a free circulation of the ſap, before you admit of their bearing any quantity of fruit at leaſt, which conſiderably impairs the ſtrength of all young new-planted or new-grafted trees. This method is to be performed three or four weeks later than any of the preceding ways, and when the juices are in high circulation.

5. Grafting in the root: This is of much later invention than any of the former ways, and, in many circumſtances, may be an improvement on them all. It is performed by cutting the clean ſmooth roots of the ſtocks in pieces five or ſix inches long, and as large, or a little larger, than the graft of the ſame ſpecies you are to put in it: Let them be whip-grafted and tyed together very cloſe, ſo as to prevent the wet from affecting the wounded parts, and plant them ſo deep, that the graft, which ſhould be four or five inches long, may be about one half buried under the ſurface. This is an admirable practice, both for improving the flavour of fruits, and preſerving a nearer ſimilitude to the tree from whence you took your grafts; for by this means the grafts will root, and theſe roots increaſe as well as thoſe from the ſtock: Hence, as all plants muſt draw much

from the ſtock on which they are grafted, ſuch will have a leſs dependence, having great part of their nouriſhment from their own proper roots. To this circumſtance I muſt alſo obſerve, that I can ſee no manner of difficulty in making theſe grafts as genuine a ſpecies as the original tree from which they were taken, by cutting away the ſtock altogether, after they have ſtood two or three years, in which time they will be ſufficiently rooted to admit of a ſeparation, and ſucceed by themſelves. This hint may aſſuredly be improved to much advantage, and is only making the ſtock a temporary nurſe till the graft has acquired ſtrength. Where this method is to be put in practice, the grafts may be an inch or two longer than thoſe before mentioned, as, by giving them that additional depth in the earth, they will the ſooner and the more abundantly root.

THE ſeaſon of grafting muſt be regulated according to the temper of the weather in the ſpring, earlier or later as that ſhall be more or leſs ſo. The uſual time of performing it, is when the buds begin to ſwell, which no doubt appears very conſiſtent with nature; but as we ſeldom have uniformly mild weather for ſeveral weeks after that period, I have in my earlier years often paid very dear for my compliance with this ſo common and ſeemingly reaſonable a time for the operation, both from a continuance of cold rains, and ſharp withering froſts, and that even after the grafts have begun to puſh out their ſhoots, from whence I have frequently loſt whole quarters of them: Therefore, from as much practice with my own hands in grafting as perhaps any one man of my age has ever had, I adviſe, that the grafts, particularly of hardy free-ſhooting trees, having been cut and laid in the ground before

the buds begin to ſwell; I ſay, in that caſe, I adviſe the operation to be deferred till the circulation of the ſap is briſk, and the buds of the ſtocks are beginning to break into leaves, when the grafts will immediately unite, which done earlier, cannot ſo ſoon happen; beſides, at this advanced time in the ſpring, there is at leaſt a greater probability that the weather afterwards will continue milder. At the ſame time it muſt be obſerved, that the weak ſhoots of tender trees will not admit of being ſo long cut as the more hardy.

LET it ever be a ſtanding rule, not to graft while it actually freezes or rains; in either of which events, no reaſonable ſucceſs need be expected.

IT has lately become a frequent practice, after barely tyeing the grafts with baſs, and without the application of clay, to hoe up the earth ſo deep as to cover the ſtock; and in this way, with hardy trees, in a dry mild ſpring, I have ſucceeded to my wiſhes: But in this country we have been ſo little acquainted with theſe temperate ſeaſons of late years, and I have ſuffered ſo much by my too ſanguine hopes of better weather, that till I ſee ſome alteration in our climate, I ſhall neither adviſe others, nor venture deep myſelf, without taking every precaution, except from abſolute neceſſity, and where the hands needful to accompliſh the buſineſs ſeaſonably cannot be procured. I muſt therefore recommend, that your grafts be tyed as firm as may be, without galling them, that the wounded part of the ſtock may be intirely covered with the baſs, and that the clay may be well tempered, and put on ſmooth and cloſe, fully covering the baſs, and top of the ſtock, in ſuch a manner as will beſt expel the air, and prevent all other injurious effects to be apprehended from cold and wet.

INOCULATION or budding is a ſpecies of grafting infinitely ſuperior to any other yet invented for moſt kinds of trees, and will ſucceed with many ſorts that will not grow, nor make good plants, by any other means. From this practice of only opening about an inch of the bark, and gently thruſting in a ſmall bud between that and the wood, there is not the ſmalleſt violence committed on the ſtock, which, being done in the growing ſeaſon, in two or three weeks becomes perfectly ſound.

THIS operation is commonly performed from the middle of June till the middle of Auguſt, a little ſooner or later as the ſeaſon is more or leſs forward: But the beſt rule to obſerve, is to begin when you find the buds fully formed at the extremity of the ſame year's ſhoots, at which time they have finiſhed their ſpring growth, and are ripe for inoculation.

IN very hot dry ſummers, particularly in light thin ground, the bark of the ſtocks will not open clean and ſmooth, from both a want and ſtagnation of juices: To remedy which, two or three weeks before the ſeaſon of budding commences, let the ſtocks be regularly watered every third or fourth evening; and if ſome is ſprinkled over the tops, from the roſe of the watering-pot, to imitate Nature's watering, it will contribute much to invigorate them. This too may be very ſucceſsfully applied to the trees from whence the buds are to be taken; by not knowing or attending to which, I have frequently ſeen whole quarters of buds periſh, and others where the ſtocks were ſo hide-bound that the bark would by no means ſeparate from the wood to receive the bud. A watering or two after the buds are put in, will likewiſe be of uſe.

THE beſt time for budding is in cloudy weather, (though not when it actually rains) or in the evening of a warm dry day; for if it is done in the middle of it, the ſhoots will perſpire ſo faſt as to leave the buds deſtitute of moiſture.

BUDDING is highly preferable to every operation for all kinds of ſtone fruit, which, from all the other ways of grafting, are very apt to produce a gum at the wounded part, with which, if the plants are once ever ſo little infected, they never after ſhoot freely, or live long. It is likewiſe beſt for moſt of the nut-bearing trees, many of which will ſucceed in no other way than by this, or inarching, and which, as has been ſaid, is rather an amuſing curioſity than any ſolid improvement.

THE manner of performing the different ways of grafting, has been deſcribed in various books on Gardening; and though for that reaſon I would not ſpare a relation of it here, yet I hold it altogether unneceſſary. Every regular-bred gardener is inſtructed in it as the firſt elements of his profeſſion; and ſimple as the operations are, I never knew them readily and ſucceſsfully executed by any who had not begun early in life: I therefore adviſe all young and unexperienced gardeners, to apply for knowledge in grafting, to the practice of it, under the direction of an able maſter, as otherwiſe the moſt lively deſcription will little avail them.

THE ſtocks on which the different kinds of trees will ſucceed, and others by which their ſpecies will be improved, and their fruits meliorated, are already mentioned in the culture of theſe trees.

Chapter XL.

On FORESTS or WOODS, and the moſt ſpeedy manner of Rearing them.

To plant a wood without incloſing it, is not only amongſt the idleſt ways of throwing away money, but is laying up a fund of remorſe and diſcontent that muſt neceſſarily often occur, from the devaſtations of cattle and ſheep, whoſe browſings and bitings communicate a poiſon to the trees, which nothing but cutting them below the infected parts will expel. Let this then be your firſt care to perform in the moſt ſubſtantial manner, with double hedges, in one or other of the ways directed, according to the ſituation and quality of your field.

Though the advantages ariſing from timber, over moſt of the large eſtates in Great Britain where it abounds, are apparently great, yet we are certainly leſs attentive to the culture of woods than any other kind of plantation, and indeed than any improvement we undertake. But as I believe the increaſe of them, particularly in the cold, barren, and leſs cultivated places of the kingdom, would be of the utmoſt importance, remove many obſtructions, and pave the way to general and ſucceſsful huſbandry of various kinds, I ſhall endeavour to give ſome hints, which, if attended to, will, I am certain, much forward the growth of theſe plantations, and procure them in many quarters where ex-

periments have already been tried in vain, but not conducted judiciouſly, or on proper principles.

WHERE the ſoil is of a looſe ſandy quality, the trees muſt neceſſarily be planted in pits, as, by breaking up the whole ſurface, many of them may be blown out of the ground, and others buried by the driving of the ſand, where the ſituation is expoſed. With reſpect to every other ſoil ſolid enough not to be driven by the winds, notwithſtanding much has been ſaid in defence of pitting plants, I muſt from experience, and I think plain reaſon too, diſſent from it, and maintain, that all ſuch cannot be too long fallowed and pulveriſed, by frequent plowings and harrowings; grounds of a middling quality, after graſs, will require a ſummer and winter's labour at leaſt; an obſtinate clay, not leſs than two.

NEITHER is the extraordinary expence of labouring this ground ſo great, as may at firſt view appear without reflecting on future circumſtances. The pits in old, hard, uncultivated land, muſt be made three times as large as on that which is dreſſed, and ought to have a good deal of looſe earth round the roots, otherways, in wet ſeaſons, the water will ſtagnate and rot the fibres; and in any ſeaſon they will be ſo much obſtructed in their progreſs when they reach the hard uncivilized earth, as to become ſtunted and hide-bound, from which they ſlowly recover, and that ſeldom till they are cut over; whereas, in the other ſituation, the pits need be made no larger than eaſily to contain the roots, as they will proceed in their growth, and ſpread their roots near the ſurface without interruption. However, if planting the ground in its natural ſtate is determined, let the pits be made the preceding

ſpring, to correct and meliorate the fourneſs and obſtinacy of the ſoil; and if you can procure a mixture of more generous mould, and oppoſite quality, let it mixed, and often blended together with that taken out of the pits, as ſoon after as may be. In planting after this manner on ſtiff or wet land, give the greateſt attention that the trees be planted no deeper than barely to ſupport themſelves againſt the winds, and that the pits may be dug conſiderably broader for their depth, than the uſual proportion allowed in looſe dry ground.

For a century paſt the Scots Fir has been the common nurſe of all the better kinds of Foreſt Trees in Scotland; and one muſt be both ungrateful and ignorant, who is inſenſible of the many and great advantages that country has reaped from the general culture of this plant. Without it, in many ſteril ſoils, and expoſed ſituations, we ſhould not have had a ſpecimen of other thriving uſeful timber trees, where now we have beautiful plantations of Oak, Elm, *&c.* Thus, though nothing is farther from my intention than to depretiate the Scots Fir, yet I muſt beg being allowed to mention others, and which I do on the moſt ſolid of all foundations, experience, that will produce the ſame ſalutary effects in ten or twelve years they have done in twenty, and that by eaſier and cheaper methods than even the ſmall expence of raiſing them.

The plants I mean to ſubſtitute in the place of Firs, are the different kinds of Poplars, and the large Maple, in Scotland vulgarly called the *Plane Tree*: Thoſe being of infinitely quicker growth than the Firs, can be planted of conſiderable ſizes on the

pooreſt lands with ſafety, and will of courſe ſooner effect all the benefits that can be derived from them.

I HAVE long thought we are more alarmed than hurt from the common impreſſion of hard winters being ſo generally baneful to our hardy deciduous plantations, and believing that then only the ſhelter from Firs or other plants is moſt materially uſeful. That we have ſeen two or three winters which have hurt hardy plants when young, or new planted out, muſt be acknowledged; but the caſe is far from being common, and for one loſs of that kind, we have ſuſtained many by the violence of the winds in the ſummer months, when the trees, pregnant with their juices, and loaded with leaves, are ſo heavy as to yield to the tempeſt, the roots at that time being an unequal balance to their bodies, whence theſe roots are often torn aſunder in the growing ſeaſon, bleed much, are apt to canker, and ſlowly, if ever, recover; which, in the moſt violent winter ſtorms, is ſeldomer the caſe, when the plants, much lighter, firmer in their ſhoots, and diveſted of their leaves, leſs oppoſe themſelves to, and are more rarely conquered by the winds.

IT has already been mentioned, that the trees muſt be accommodated to the different ſoils on which they are planted; and it cannot be too much inforced, to make this obſervation with the greateſt attention and judgment you have, or are capable of procuring, over all the various parts of your intended wood or foreſt, wherein, I am ſorry to ſay, we have hitherto been extremely defective. Notwithſtanding then what has been ſaid on the culture of the different trees here treated of, and the ſtations Nature has beſt adapted them for, it may not be amiſs to repeat

ſome of theſe particulars, to make what is here meant more readily underſtood, without a tedious reference to the particular trees.

I CANNOT help obſerving, we ſurely betray a general want of taſte in the diſpoſition of our woods, as in few of them any regard to elegance or beauty is paid, and which, if we did, would add nothing to the expence. Why then may not all our plantations be diverſified in walks as various as thoſe in our moſt finiſhed and adorned wilderneſſes? This, though not ſo ſprightly and chearful a ſcene, would be a no leſs magnificent one than the other, and as agreeable to many rural taſtes: At the ſame time, I ſhould be aſhamed to appear inſenſible of the pleaſure reſulting from a well-planted wilderneſs kept in fine order, and deck'd with its charming variety of hues. Thus too the free circulation of air in theſe walks and alleys would be communicated through the quarters of trees, make them more healthful and vigorous, and prevent many mortal diſeaſes incident to large crowded plantations by a ſuppreſſion of the damp vapours, which creates a mouldineſs hurtful to the plants, and contaminates the air itſelf: Beſides, thoſe walks, well plowed, fallowed, and laid ſmooth, would, from the great litter of leaves fallen, and blown upon them, ſoon become good graſs, as has been obſerved under the article POPLAR.

THE beſt ſeaſon for planting the light grounds, is as ſoon as poſſible after the beginning of October; for the moiſt and heavy, February and March. At theſe periods, your ground being prepared in one or other of the ways mentioned, and ſtaked out in the figure you chuſe, proceed to planting as follows:

If the field is diſpoſed in the wilderneſs way, let every quarter be bounded by a row of Poplars, at two, or two and a half feet aſunder; in the heavieſt and wetteſt places, let them be of the Lombard kind, and in the thinner and lighter, of the white, which, of all the ſpecies, will make the quickeſt progreſs in ſuch ſoils; and, in order to make them yield a ſpeedier ſhelter, by growing cloſe, let them be pruned or clip'd in the ſides for two or three years. Theſe Poplars ought to be planted, either rooted, or from cuttings four or five feet high, if ſuch can conveniently be procured, or as near that ſize as you can. If the whole ground is to be planted, without being divided by walks, after going round it as mentioned for the quarters, let lines of Poplars, running from ſouth to north, be planted at about a hundred, or, in very cold expoſed ſituations, at eighty feet aſunder.

The next thing to be adverted to, is the diſpoſition of the Planes in ſuch a manner as will beſt promote the growth of the other more valuable trees; to effect which, I think every ſecond line ought to be of them not next the Poplars, which will ſufficiently ſhelter whatever is immediately near them, but amongſt the trees intended for a longer continuance.

The diſtance of the trees over the whole plantation, (the bounding and dividing lines of Poplars excepted), I think, as a juſt medium, ought to be five feet every way; for whatever the advocates for very thick planting may advance, the conſequences ariſing from it, are generally more fatal, than erring in the oppoſite extreme. Plants may be too much crowded, or, what the gardeners call *drawn*, as well as too much expoſed; and the ſhelter of the Plane and Poplar trees, (for the time ſhall here be

directed, will put them beyond the want of any further aſſiſtance, than they mutually communicate to one another.

HAVING planted then one half of your intended Foreſt, free from ſtanding water, with Planes, in rows ten feet aſunder and five in the row, conſult the genius of every ſpot in it, that the remaining more valuable plants may be diſpoſed on the different ſoils they moſt delight in, which, in general, I take it to be as follows:

IN the moſt generous, deep, but dry ſoils, the Walnut, with Engliſh, Scots, and Corniſh Elms; in the moiſt and heavy, the Dutch Elm; in coarſe and ſtoney, the Cheſnut and Aſh; in light and ſandy, the Larch and Beech; and in clays of all qualities, tho' ſwampy and moſſy, the Oak. Theſe are the ſoils moſt univerſally prevailing in Great Britain, and thoſe the trees nature ſeems beſt to have fitted for ſuch ſoils. They are alſo of the greateſt value, and moſt general uſe, tho', if a little ornament and variety is wanted, a ſmall mixture of the hardy American ſorts may be added; but profitable returns being the principal object of this Eſſay, to that I chuſe, in a great meaſure, to confine myſelf.

WHERE the grounds are various, and the trees thus properly adapted to that variety of ſoils, an extenſive plantation, diverſified with groups of different trees in its different quarters, will appear far more chearful and pictureſque, than one uniform wood of the ſame kind.

SUCH a Foreſt, and to be planted in the manner I here deſcribe, I mean ſhould be in a flat field, or at leaſt one not

abounding with many large ſtones, for which reaſon only, I have altogether excluded the Scots Fir; but in mountainous rocky ſituations this plan will not ſucceed near ſo well, as the Poplars and Planes cannot have their roots covered enough to nouriſh them at firſt planting: In ſuch places therefore, Firs are perhaps the greateſt improvement can be made, planted not above three years old, when, after two years more growth, Oaks and other trees may be interſperſed wherever the land will receive them. The culture of the Scots Fir then, ſo far from being diſcountenanced, ſhould, with the greateſt propriety, be rather increaſed; as there are ſtill, in moſt parts of Great Britain, more large tracts of mountainous, beggarly, and otherways unimproveable ſurface, than the greateſt induſtry of ſeveral ages will probably overtake, and cover with theſe plants. But I ſhall now proceed to the ages and ſizes of trees beſt fitted, in forbidding ſoils and ſituations, to make our Foreſt flouriſh.

Some adviſe, that the beſt manner of rearing woods, is by ſowing the ſeeds on the ſpot. But of this I cannot approve, for ſeveral reaſons: It is, in the firſt place, a very tedious practice, allowing it to ſucceed, which, on many occaſions it will not, the ground muſt be as well prepared, kept as clear of weeds as in the nurſery garden, the land as regularly dug about the plants, and in all reſpects as well cultivated as theſe. It is a ſmall proportion of the ſeeds ſown, and the plants that ought to ariſe from them, which can remain in the wood to make trees, and, by raiſing what is ſuperfluous, the plants meant to continue are generally much injured from thoſe ſtanding cloſe together about them, which circumſtances will be attended with a much greater expence in the end, before theſe plants are out of danger, than at once making a handſome finiſhed plantation.

I AM therefore againſt raiſing a Foreſt, after this manner, with other plants than the Walnut, Cheſnut, Evergreen Oak, and a few of the other nut-bearing trees, that do not eaſily remove, or grow freely after it, and even of thoſe only where timber, without regard to fruit, is deſired; in which caſe, ſuch are preferable to the beſt otherways cultivated plants, where the land is not extremely bad.

OTHER gardeners, and indeed I am afraid the greateſt part of them, argue in defence of planting ſeedlings two years old, as the moſt hardy, and likely to ſucceed, in our barren, cold and uncultivated ſoils. This practice, however univerſal, and long ſanctified by cuſtom, has no weight with me, as, from many trials, I have found it abſurd; and I cannot help declaring, I think it both againſt nature and common ſenſe, nor can I in any other way account either for its beginning or continuance, than the bad culture too generally given our trees in the nurſery, to which being removed from the ſeed-bed, they are dibbled in without a proper reduction of their roots, ſo as to procure abundance of freſh ſpreading ones, and crowded ſo thick together, as ſoon to become much worſe than good ſeedlings, from hard carroty roots, without mouths to feed themſelves, and tall ſlender bodies, unable to bear a gentle breeze of wind.

I PRESUME no honeſt ſenſible gardener will deny, that ſeedling trees in general have one downright top-root, with few ſmall roots and fibres, in compariſon of ſuch as have been raiſed, their roots ſhortened, and tranſplanted; or that theſe tranſplantations, repeated at proper periods, will not ſtill increaſe the roots, and otherways, by change of food and ſituation, render the plants

more hardy. If this is the caſe, it appears to me no leſs ridiculous to aſſert, a young tender plant ſhould be as hardy, juſt taken from a warm ſeed-bed, and immediately expoſed to a bleak ſituation, and cold uncultivated ſoil, as that an infant from the breaſt ſhould be able to bear the inclemency of the ſeaſons, and live and thrive with coarſer food, and leſs ſhelter, than a child who has been properly nouriſhed for ſome conſiderable time, and inured by degrees to various changes.

THE analogy between the animal and vegetable creation, which in many circumſtances are very intimate, is not too far ſtretched in the preſent compariſon, nor is what I have advanced a ſpeculative notion; but to exemplify it, I ſhall mention the following experiments to that effect, and which I have repeatedly tried:

I HAVE ſown the ſeeds of Foreſt Trees on the pooreſt ground, planted ſeedlings, and ſtrong well-nurſed trees, from five to ten feet high, on the ſame ground, and at the ſame time, where the old well-cultivated plants have frequently made goodly trees, when the ſeedlings have periſhed, and, from the ſterility and coldneſs of the ſoil, the ſeeds have not ſo much as vegetated. In ſhort, the mouths of ſeedlings are not ſo well fitted as larger plants, to draw ſufficient nouriſhment from crude, rank, and uncultivated ſoils; and as I have truly found what is here ſaid in many inſtances to be the caſe, I am obliged to believe, that the general practice of planting ſeedlings in poor, and larger trees in good land, ſhould be quite reverſed; but ſtill attending to this moſt eſſential and indiſpenſible circumſtance, that the large plants have been removed as directed, and otherways properly cultivated.

HAVING then planted your nurſing trees, and rejected both the ſowing of ſeeds, and planting of ſeedlings in your wood; I ſhould adviſe your plants to be four or five years old, that is, to have been removed at the proper times already mentioned from the ſeed-bed, and cultivated in the nurſery two or three years, more or leſs according to their kinds, and the quality of the ground whereon they ſtand; with ſuch finiſh your plantation, in the manner, and at the diſtances of the Planes. Thoſe trees will be able to get the better of all weeds, but a few of the large-growing ſorts; and the land may be cultivated by hoeing in ſummer, and digging in the autumn and ſpring months, or not, agreeable to the expence you chuſe to lay out, tho', if that expence is beſtowed for three or four years, the more vigorous growth of the trees will ſoon amply repay it.

WHEN theſe plants have ſtood four years, but not longer, take away every ſecond Plane, and, in two years more, the remainder of them, with every ſecond tree of the other kinds, which will leave the whole plantation at ten feet aſunder.

THE trees raiſed cannot be loſt to a perſon who has any conſiderable extent of land, few large Britiſh eſtates being yet too much crowded with wood over all parts of them. They may be planted on the farms in hedge-rows, and many various ways to great advantage, and would ſtand a great deal of money from a nurſeryman; ſo that the expence of this plantation ought not to be grudged, having effected two of the moſt capital points on any eſtate, a thriving wood, and a good nurſery.

FROM this time theſe plants will require no further trouble, than pruning away the ill-placed ſuperfluous branches, till they

bring money, which they ought to do in eighteen or twenty years from planting, at which time three-fourths more of the remaining trees, and all the Poplars, muſt be taken away, which reduces them to twenty feet aſunder, and when the value of the timber, cut for country uſes, will certainly exceed both the expence of labour and rent of the ground, much more than any other crop will; beſides, the trees at theſe diſtances will not hereafter prevent the ground from yielding good paſture, and the value of the plantation, for fifty years afterwards, will annually increaſe in greater proportion than before.

THOUGH I have mentioned the whole trees in this Foreſt to be planted the ſame ſeaſon, yet if the nurſing ones, which are ſoon to be taken away, were planted a year or two before the others, particularly in very bad ſoils, and expoſed ſituations, it would, in place of loſing, be gaining time, as, from their immediate and extraordinary ſhelter, the better trees would have little check from the winds the firſt ſeaſon, which when they meet with in a violent degree, often keeps them at a ſtand for ſeveral years. It is therefore of the greateſt conſequence, that every poſſible aſſiſtance be given them, to encourage a free growth at being firſt planted out.

NOTWITHSTANDING of warmly recommending ſhelter at firſt planting, as the moſt probable means of ſooneſt procuring a flouriſhing plantation, yet I muſt no leſs recommend attention in taking away the neceſſary proportions, where too thick, ſeaſonably as they advance; from which neglect, I have often ſeen many extenſive plantations of noble Oaks ruined, by being overhung with Scots Firs, which not admitting a free circulation

of air, they have been drawn up to the moſt diſproportioned heights, and this misfortune nothing but cutting over will effectually cure; but the different periods here directed for thinning them, will generally anſwer your intentions.

FROM the late and now univerſal taſte in all new and expenſive deſigns in the garden way, of throwing a large extent of ground about the houſe into lawns of graſs, many fruit-trees, which in former times generally grew in the kitchen garden, and theſe gardens adjoining to the houſe, are now deſtroyed, from whence common fruit has riſen in price to the full proportion of every other article in life. I cannot therefore but believe, that an orchard, which, ſenſibly planted, will little or not at all impede the growth of graſs, corn, and other vegetables, would ſoon become the higheſt improvement the lands in this country are capable of receiving: But a diſſertation on Fruit-trees being foreign to the preſent ſubject, I only mention, that if ſome of the moſt favourable quarters for fruit were incloſed, and planted with ſtrong well-cultivated trees of them, in fourteen or ſixteen years, every tenth acre of the orchard would certainly pay the whole expence laid out in our Foreſt, and lay the foundation, without further expence, of an eſtate, increaſing conſiderably for ages. Apples and Pears, the moſt certain and profitable ſtandard fruits, will ſucceed in land of any tolerable depth, though coarſe and heavy, having been expoſed and meliorated by the winter's froſt and ſummer's ſun.

CHAPTER XLI.

On making TREES FIT FOR REMOVAL, that have ſtood uncultivated and too thick in Nurſeries or Woods.

THOUGH the longeſt experience, and moſt extenſive knowledge in planting, will not for many years, if ever, bring overgrown unremov'd trees to the comely figure and luxuriant growth of thoſe that have been reared from young plants, according to the preceding directions, yet, where one cannot procure ſuch, and have of the former, they may turn them to account, and ſoon make a figure in a bare field, or about a new-built houſe.

THE trees worthy of this labour ought not to exceed fourteen or ſixteen years growth, or from twenty to twenty-five feet high, as, if older, in general the cutting of either their roots or bodies will be doing them a violence they will never recover ſo perfectly as to become handſome trees, but ever continue in a ſpreading buſhy form.

THE ſorts to be treated in this manner, are the different ſpecies of Elms, of which the Engliſh, as the moſt aſpiring, and that ſooneſt recovers its wounds, is far the moſt proper. The Lime will bear this operation at a great ſize, ſoon heal, and afterwards may be formed with eaſe to any ſhape you pleaſe:

The Aſh and Oak will likeways admit of cutting well enough at the ages mentioned, but theſe ought to be cut higher in proportion to their bulk than the former, and where the bark is ſmoother and thinner; from whence the ſhoots will be fewer, and riſe in a more perpendicular direction. In this direction, and in the ſtrength of the branches, they will be much aſſiſted, by rubbing off all the tender ſhoots, but one or two of the moſt erect and vigorous, from the beginning till the end of June.

The Beech, the Platanus, the large-leaved Maple, the Hornbeam, the Sweet Cheſnut, the Horſe Cheſnut, the Poplar, and the Laburnum, will alſo bear being reduced in height, but will not afterwards grow lofty, or in the pyramidal form, but, in detached trees, on lawns, or other graſing fields, may make graceful ſpreading plants, and afford an agreeable ſalutary retreat for men or cattle from the ſcorching ſummer heats.

The firſt ſtep to be taken in this buſineſs, is, to mark out what trees (if any) you intend ſhould remain on the ſpot, as alſo thoſe you mean to remove for planting again, leaving them at ſuch diſtances, as that there may be ſufficient bounds for making a deep trench round each plant for undermining them the following ſeaſon. This being done, in autumn grub out by the roots all the others, and trench the ground at leaſt three feet deep, of whatever quality it be, which will encourage many ſpreading roots from the ſides, and better prepare them for what is to enſue. Early in the ſucceeding ſpring, cut your trees over at a ſuitable height, a good deal ſlanting, immediately above where buds are, or branches have been, and rub over the wound with pitch, or cover it with a plaiſter of clay mix'd with horſe-

dung, ſuch as has been directed for grafts. It is impoſſible juſtly to aſcertain the height theſe trees ſhould be reduced to, that depending on their proportions, as the ſtrong-bodied plants muſt be cut higher than the more ſlender of the ſame height. I ſhall ſuppoſe them, from ſtanding very thick, to be drawn the length of twenty-five feet; in that event, cutting them from twelve to fifteen feet high may probably be about a proper medium, but the preciſe ſtandard muſt depend on ſome little knowledge in the operator, or rather director, as indeed the wounding or pruning of trees of every kind, and for every particular purpoſe, ought not to be left to the barbarity of common labourers, but have more attention beſtowed, and gentler treatment given them, than they uſually meet with.

THE general practice in caſes of this kind, is reducing both the tops and roots of the tree at the ſame time: But this is a ſeverity they will not bear; for though they may outlive it a few years, it will be but in a conſumptive way, from which they never fully recover: Therefore, to do this effectually, two years more muſt at leaſt be employed.

THE following ſpring then, make a trench between three and four feet deep, and full four feet wide, round all the plants to be removed: Bend the tree ſo far to one ſide, as that you can come eaſily at the downright roots; after which, with a ſharp hatchet, cut them acroſs, but leave the ſide-roots, particularly thoſe neareſt the ſurface, as little diſturbed as may be: This being done, replace the plant in its former upright ſtation, and throw back the earth taken from about it.

A YEAR after, open the ſame trench, and ſhorten all the ſpreading ſide-roots, which will much increaſe their number, and make the earth adhere to them when the trees are raiſed for good, and which they may be the ſucceeding ſeaſon, but it will ſtill be better if they remain another. It may naturally occur, that if any of the trees are to remain, reducing their overgrown heights is all that is neceſſary to be done with them.

THE reaſon of taking two or three ſeaſons for preparing theſe roots in the manner directed, is, that the ſtrength of the trees may be as little impaired as poſſible, particularly ſuch as you intend to grow lofty in the pyramidal form, which, when all the wounding operations are performed at once, they cannot do, as the ſhoots, from weakneſs, will not grow perpendicular, but looſe and ſtraggling, though, by uſing theſe precautions, and having this patience, which in the main is loſing no time, the upright ſhoots will be ſtraight and vigorous before the trees are raiſed, and, being furniſhed with plenty of young freſh roots, they will riſe with bulks of earth about them, and continue in a healthful ſtate.

FOR the beſt manner of planting theſe trees, ſee the ELM.

FINIS.

POSTSCRIPT.

IF the foregoing TREATISE *is favourably received by the Public, another, on* FRUIT-TREES, *will ſuddenly follow, principally written a good many years ago, and before any part of this was farther advanced than Notes taken from the different effects of different practices. What is meant to ſucceed, was founded during very extenſive practice, and the reſult of a great variety of annually repeated experiments and obſervations for above twenty years; during which time, fortune was favourable, and liberally afforded all the aids neceſſary to make the fulleſt and moſt accurate enquiries into the nature of that ſubject, being provided with a conſiderable extent of ground in the happieſt ſituation this country will admit, and a greater variety of the better kinds of ſoil than I have ever known in that extent. Theſe favourable opportunities were not for ſome time given in vain: A great number of wall, eſpalier, and ſtandard Fruit-trees, were planted out—for all the different purpoſes, and in all the different forms hitherto directed or practiſed: Hence every opportunity of inſtruction was given, and the materials for the propoſed publication were collected.*

From the lateneſs of our Spring, and ſhortneſs of our Summer months, we are, by uſual practice, incapable of ripening the beſt kinds of French Fruits, even on our warmeſt ſouth walls; and our common eſpalier and ſtandard kinds, that come late in Autumn, are, many of them, from want of maturity, unhealthy,—and all of them far from perfection.

If then, attended with many other agreeable circumſtances, a method ſhall be plainly pointed out for ripening our Winter Fruits, in all their various ſituations, at leaſt three weeks earlier *than they now are, and at the ſame time improving them both in ſize and flavour, I muſt imagine ſuch a diſcovery ought to intitle a man to the protection and encouragement of the Public, as the effects ariſing from it muſt be both honourable and profitable to the whole iſland of Great Britain. By proſecuting this plan, we ſhould, to my certain knowledge, eat at leaſt as good fruit at Edinburgh as they now do at London,—and, as near as I can judge, much about as good at London as they do at Paris.*

I am very ſenſible, that to ignorant and illiterate Gardeners this will appear a ridiculous, and even to thoſe of competent knowledge and obſervation, a ſanguine attempt; but I can honeſtly, and will therefore boldly affirm, from no ſlighter a foundation than having already done ſo, that I can not only perform the utmoſt circumſtance here advanced, but do it likeways by eaſy means, and without any additional expence to the uſual culture worth naming.

The original bent of my genius inclining me to the ſtudy of Fruits, and my firſt Eſſays on Gardening being experiments on improving their culture, I have long intended the publication now propoſed; but a bad ſtate of health, beſides the great expence of Plates, &c. *that muſt neceſſarily attend ſuch a work, and ſome other unlucky circumſtances, has hitherto prevented me: And now I am not ſorry it was delayed, as the longer I have lived, and during the farther continued courſe of my obſervations, I have ever found that kindly warmth proceeding from the ſhelter of Foreſt-trees, and Hedges, no leſs eſſential towards the production of generous*

Fruits, than other common vegetable crops; whence the Treatiſe now preſented, ought naturally to precede the other deſigned.

Tho' many are the examples I could give from the improvements made on the culture of Fruit,—it may here be ſufficient only to mention one: That I have eat my own Golden Pippins at Edinburgh, fully ripe, double the common ſize, and in all reſpects in the higheſt perfection, the beginning of November. Upon the whole, had I a thouſand lives at command, I would ſtake or riſque them all, without the ſmalleſt anxiety, on the ſucceſs of what is above mentioned.

As I have noticed the indiſcretion of ſome Authors, by writing on all the various branches of Gardening,—it may here be neceſſary to inform the ignorant, that I do not ſubject myſelf to that juſt cenſure by the propoſed work. The culture of Fruit and Foreſt-trees, in many material circumſtances, are ſimilar, and the ſtudy of them entirely conſiſtent with one another,—or rather, but two parts of the ſame plan.

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